The New England
Journal of Medicine

VOLUME 208 APRIL 13, 1933 NUMBER 15

NEW ENGLAND HEART ASSOCIATION

A BRIEF REVIEW OF THE ESSENTIAL PATHOLOGY OF PERICARDITIS*

BY CHARLES F. BRANCH, M.D.†

THE object of this paper is to present a review of the essential pathology of pericarditis for correlation with a clinical survey of the same subject.

Acute pericarditis is almost always of bacterial origin. A survey of available statistics coupled with a large autopsy series leads to the conclusion that the pneumococcus is responsible for about 35 per cent of the cases of acute pericarditis, the organism of rheumatic fever for about 30 per cent, while other organisms such as staphylococci, streptococci, and tuberculosis account for about 15 per cent more. The remaining 20 per cent of acute pericarditis cases are non-infectious and occur as the terminal event in such diseases as uremia, diabetes, the profound anemias and leukemias, coronary thrombosis, and following the introduction of the rare foreign bodies that find their way into the pericardial sac. Oddly enough, it is this 20 per cent minority that makes the mortality rate in pericarditis so very high, appearing in these diseases as a terminal phenomenon. Just why it occurs as a complication in this group of diseases is not easy to explain, beyond admitting that acute pericarditis appears as the reaction of a damaged mesothelial surface to an irritant. In most cases it is probably due to an undemonstrable retained toxin, or the anemia produced by a general or local condition; more rarely the direct irritation produced by a foreign body. Acute pericarditis shows a striking incidence in males as compared with females occurring in a ratio of three to one, and it has been reported in ages ranging from one to 75 years, with an average of 35. Negroes are more susceptible to the disease than are white people.

In general a clinical pathological classification of acute pericarditis would be as follows: serous, fibrinous, purulent, hemorrhagic, and tuberculous. Any of these may appear as a pure textbook form, but more commonly they occur together. Pathological processes are progressive in nature; they tend to heal or get worse; they are not stationary. Thus, it is much more common than not, to find a simple serous inflammation passing into a sero-fibrinous affair, or even becoming fibropurulent in character.

A true fibrinous pericarditis (or so-called dry pericarditis) is probably rare,—it is almost invariably some stage of a sero-fibrinous inflammation. This type is predominant in rheumatic fever, is the characteristic response of a pericardium to retained toxins such as those suggested in uremia, and is the type of pericarditis found as the terminal event in nutritional disturbances such as the anemias and infarcts. At autopsy the pericardial sac is filled with more or less thin, clear to slightly turbid, fibrin-flecked fluid, although this might later have been absorbed leaving what then would have appeared as a fibrinous pericarditis. The visceral and parietal pericardium are almost always separated, although occasionally festoons of fibrin may extend from one to the other. Both surfaces are usually covered with a relatively firm, yellow to yellowish-gray fibrin which, due to the motion of the heart, assumes a marked shaggy roughness sometimes spoken of as "cor villosum". Occasionally the fibrin tends to be thrown into rugae. Microscopically the surface is covered with a layer of fibrin of variable thickness, usually infiltrated with many monocytes and a very few neutrophils, while beneath this is a layer of granulation tissue of a depth and extent dependent upon the length of time the condition has existed.

Under some circumstances not easily explained, this shaggy fibrinous reaction covers only a relatively small area of the visceral pericardium. As it heals it leaves a localized area of fibrous thickening, a white scar commonly spoken of in the literature as a "milk spot". Under some circumstances it is conceivable that this is the residua from a broken fibrous festoon between the visceral and parietal pericardium, but for those that hold this theory it is interesting to note that one seldom finds a corresponding plaque of thickening on the parietal pericardium.

*From Boston University School of Medicine and the Massachusetts Memorial Hospitals.
Read at the meeting of the New England Heart Association December 7, 1932.

†Branch—Professor of Pathology, Boston University School of Medicine. For record and address of author see "This Week's Issue," page 804.

Under other circumstances, perhaps most frequently associated with the general dropsy of a cardiorenal syndrome and more rarely with an infection producing a low-grade toxin such as tuberculosis or rheumatic fever, the fibrinous part of the picture is in abeyance and the serous phenomenon predominates. This then may be the condition known as "hydropericardium" and, strictly speaking, is seldom associated with an acute pericarditis. The normal amount of pericardial fluid varies from 25 to 50 cc., and the usual abnormal amount present is less than 500 cc., although over 4000 cc. have been reported. Because this fluid accumulates gradually and rarely in large quantities, cardiac embarrassment is unusual. As White[1] says, "Hydropericardium as a part of general anasarca due to heart failure or nephritis is not an important condition in itself, the course and prognosis naturally depending on the underlying disease."

Acute purulent pericarditis as produced by the pyogenic organisms, almost invariably passes through various stages of a serous and fibrinous inflammation. Also, it is interesting to note that some authorities maintain that the organism producing the lesion may be entirely confined to the pericardial wall, never reaching the sac itself and not appearing in cultures from the pus, though the bacteria can be demonstrated in the wall. At autopsy, the pericardial surfaces may be covered with thick shaggy fibrin with festoons between them; they may be covered with fibrin that is almost completely organized and therefore low, firmly adherent, and not at all shaggy; or there may be no noticeable fibrin present, the surfaces being bright pink to red, dull or slightly granular and bathed in thin, fluid pus.

Hemorrhagic pericarditis should invariably refer to an acute inflammatory reaction in which, due to a special etiological agent, red cells play such an important rôle in the inflammatory exudate that it is tinged from a light to a dark red. It may vary considerably in quantity. The longer it has persisted, naturally, the more reddish-brown the exudate becomes because of the destruction of the red cells. It is most characteristically found as an accompaniment of tuberculosis, syphilis, malignancy of the pericardium, or coronary thrombosis. This condition must not be confused with hemopericardium, in which frank hemorrhage into the pericardial sac occurs due to rupture of the heart or its vessels, as in coronary thrombosis, infarct, or aneurism. Under these conditions the pericardium usually contains bright red blood. Needless to say, the rapid accumulation of blood in the pericardial sac gives rise to cardiac tamponade with ensuing death.

Tuberculous pericarditis though not common is far from rare. It is of course secondary to tuberculosis elsewhere, and almost invariably is a direct extension from the pleura or mediastinal lymph nodes. As a rule in its early stages the tubercles on the visceral and parietal pericardium are obscured by a thin overlying fibrinous exudate, while the cavity contains varying amounts of a clear, serous to blood-tinged fluid. If the patient survives for some time the pericardial sac usually becomes completely obliterated in a mass of tuberculous granulation tissue, sometimes as much as an inch thick. In my experience it has been rare to find any actual invasion of the myocardium although extensive invasion has been reported. (The usual manner of death again is a tamponade due to the mass of tuberculous granulation tissue.) Death is due to embarrassment of the heart by the surrounding masses of granulation tissue.

The course of acute pericarditis is variable. It is quite astonishing how many of the cases recover or cause so few symptoms that they are discovered only accidentally at autopsy or evidence of their previous existence found at autopsy years later. It is a fair assumption that if the fibrinous pericarditis heals, whether it passed through a serous or purulent stage, it will leave adhesions between the visceral and parietal pericardium. They depend upon the extent of the lesion and the amount of fibrin present. These adhesions may completely obliterate the pericardial sac in some instances, may leave a few long fibrous festoons in other instances, and may be represented only by a local fibrous scar, the "milk spot". Death from acute pericarditis usually occurs in those cases in which a large purulent exudate has inadequate surgical drainage; a large serous exudate creates profound pressure symptoms, or the case falls into the 20 per cent of terminal phenomena above mentioned, where the pericarditis is the last straw in a complex clinical picture.

In spite of the fact that "chronic pericarditis" fails to appear in the index of the majority of pathology textbooks, nevertheless it is imperative that the clinician keep in mind an entity usually spoken of as "chronic adhesive pericarditis". This condition is frequently present in the rheumatic who has passed through several exacerbations. It is common in tuberculous pericarditis and is the residuum of many acute pericardites of infectious nature. The cause is frequently unknown because the preceding acute condition escaped notice at the time. Except in the rheumatic and tuberculous cases, the somewhat academic point might be brought up that they are not chronic but healed adhesions, inasmuch as the microscopical findings consistent with a true chronic inflammation are not usually present.

The adhesions composed of tough fibrous tissue may be partial, or may completely obliterate

the pericardial cavity. In the former it is rare that the constant motion of the heart has not so stretched and thinned these adhesions that the organ is allowed ample movement within the sac, its function and size not being interfered with. Even in the completely obliterating type this arc of movement may be great enough not materially to affect the physiology of the organ. Serious complications arise when either of the above types of adhesions firmly fix the visceral and parietal pericardium to each other, to the pleura, diaphragm, or mediastinum, so that definite limitation of motion increases the work of the heart thereby affecting both its size and function. More rarely the adhesions may be so profound that they constrict and obstruct the great veins, thus giving rise to a general and marked chronic passive congestion. This in turn creates a brown induration of the lungs with respiratory symptoms. It also gives rise to a passive congestion of the liver which may eventuate in a true cardiac cirrhosis or the so-called "chronic mediastinopericarditic pseudocirrhosis of the liver," with or without a polyserositis. Lastly, it gives rise to a set of clinical symptoms referable to the gastro-intestinal tract which are often misinterpreted or not recognized by the clinicians. I refer to varices of the entire gastro-intestinal tract, though more particularly of its upper portion. These give rise to obscure bleeding of varying intensity, indefinite digestive disturbances, and anemia. Any pathologist who averages 300 autopsies a year not infrequently encounters cases in which the terminal cause of death has been the frank rupture of one of these varices with profound intestinal hemorrhage.

If there is any one point that I should like to stress more than another in closing, it would be to impress upon your minds that as you see your cardiac patient from day to day it is necessary to remember that all pathology is progressive. Because you have a serous pericarditis today does not obviate the possibility of its being purulent tomorrow. Because you hear a dry friction rub today which is gone tomorrow, it almost certainly does not indicate that the pericarditis has healed or ceased to exist.

REFERENCE

1 White, P. D.: Heart Disease. New York, The Macmillan Co., 1931, p. 513.

MEDICAL ASPECTS OF PERICARDITIS*

Dr. S. A. Levine† next discussed the medical aspects of pericarditis. The speaker presented the following clinical classification, mentioning a few important facts pertaining to each type:

1. *Hydropericardium.* This is similar to hydrothorax, and is really not of much importance clinically. Treatment is directed at the cause of the condition. Tapping is of little value, though it may prolong the patient's life a short time in certain instances.

2. *Adhesive pericarditis,* adherent pericardium. This is not often diagnosed until postmortem examination, and is not a medical problem. There may be no striking clinical signs, though demonstration of calcification by x-ray is pathognomonic. Fixation of the apex impulse, Broadbent's sign, and polyserositis are helpful but not wholly reliable signs.

3. *Acute nonrheumatic pericarditis.* (a) This occurs in from 10 to 20% of cases of coronary thrombosis. Its presence is often of diagnostic importance in the recognition of this condition. It does not alter the therapy in this disease, but makes the prognosis slightly worse. (b) In chronic nephritis and uremia a pericardial friction rub usually means that death will occur within three weeks. (c) In pneumonia the diagnosis is important because tapping and surgical drainage are indicated. The diagnosis is made on hearing the friction rub or if a pneumonia patient runs an "empyema fever" and yet has an adequately draining empyema cavity, especially if the draining empyema be on the left side.

4. *Tuberculous pericarditis.* This is a very serious condition, with a high mortality. Clinically it is characterized by, (a) effusions greater than in rheumatic pericarditis, in amounts of 900-1000 cc., (b) normal heart muscle and valves as opposed to the rheumatic type, (c) the fluid is usually serous or serosanguineous, (d) repeated tappings are usually necessary. According to Dr. Levine, it is still a question whether air injections are of therapeutic value in this type of pericarditis.

5. *Rheumatic pericarditis.* When this condition arises, it is apt to come several weeks after rheumatic fever. No new therapy is needed except possibly a locally applied icebag. These cases should be tapped only very rarely, on account of the risk of striking a coronary vein with the needle. The diagnosis of rheumatic pericarditis is made on the following points: (a) history of rheumatic fever, (b) audible friction rub, (c) with signs of a left lower lobe pneumonia it is to be suspected (Ewart's sign), for it may give all the signs of this condition, (d) delayed conduction time (first degree heart-block), (e) a peculiar, short, irritative, hacking, non-productive cough, (f) a maximum feeling of comfort in the upright position, bending forward, (g) precordial pain.

6. *Metastatic pericarditis.* This is a purulent type of pericarditis, most common in children after upper respiratory infections. Drainage is necessary and lifesaving.

*Digest of a paper read at the meeting of the New England Heart Association December 7, 1932.

†Levine—Assistant Professor of Medicine, Harvard University Medical School. For record and address of author see "This Week's Issue," page 804.

SURGICAL ASPECTS OF PERICARDITIS*

DR. E. D. CHURCHILL† gave a brief talk on the surgical aspects of pericarditis. To the surgeon the syndrome of cardiac tamponade is of utmost importance. This is the condition produced by pressure upon the auricles and great veins due to effusion within the pericardial sac. Seen most clearly and characteristically in wounds of the heart, it occurs also in acute suppurative pericarditis if the infection is very virulent. The rapidity of the formation of the fluid is just as important as the volume in the production of cardiac tamponade. The signs of tamponade are venous engorgement, reduced arterial pressure, liver engorgement, and peripheral edema.

In tapping the pericardium, Dr. Churchill prefers to enter the chest between the seventh costal cartilage and the xiphoid, with the needle directed upward and backward. In acute suppurative pericarditis, surgery preferably with open drainage, is indicated. Statistics give a false idea of the efficacy of the surgical treatment, because of the tendency to add single successful cases to the literature. Although perfect drainage may be obtained, the patients often die two to three weeks postoperatively, from a cause not accurately determined. Dr. Churchill has been successful in one out of six cases thus far, three of the patients dying of a pyemia in which the pericarditis was one of multiple foci of infection.

Relief is sometimes obtained in the constrictive type of chronic adhesive pericarditis, the so-called Pick's syndrome. Of 37 cases found by the speaker in the literature, in five cases the operation was not completed. There were seven operative deaths, two patients showed no improvement, and in 19 cases there were good results. Operation should therefore be attempted in these cases.

Dr. Churchill concluded by saying that he had had some experience with thoracolysis in the form of decompression operations for marked cardiac enlargement. He believes that the procedure may prove helpful.

The discussion was led by Dr. Roger I. Lee. Dr. Lee said that he was a little more optimistic about purulent pericarditis than the previous speakers, and added that he wished to emphasize the not altogether uncommon pericarditis following upper respiratory (especially streptococcus) infections.

Dr. Paul D. White exhibited an early account (Senac, 1749) of pericarditis, and added that most cases of pericarditis are unimportant clinically. Over 50 per cent of cases are missed, because there are no symptoms or signs. Increased venous pressure, an enlarged liver, and ascites with few or no heart signs especially in a young person, should suggest Pick's disease. Calcification in the pericardium is really the only infallible sign in pericarditis. There is no evidence as yet that pneumopericardium is of value in tuberculous pericarditis.

Dr. Morrison of the Beth Israel Hospital added that difficulty in swallowing may be a sign of pericarditis, especially in children.

*Digest of a paper read at the meeting of the New England Heart Association, December 7, 1932.

†Churchill—John Homans Professor of Surgery, Harvard University Medical School. For record and address of author see "This Week's Issue," page 804.

EXTRACTS FROM THE FEBRUARY *BULLETIN OF THE METROPOLITAN LIFE INSURANCE COMPANY*

The occupational fatality rate for the year was 22.9 per 100,000, the lowest in the Company's experience, covering a period of twenty-one years. It was 16.1 per cent less than that for the year before, when the previous low was recorded. Similarly, the occupational fatality rate for adult colored males declined to a new low figure, 21.7 per 100,000 in 1932, a decline of 19.3 per cent.

Since 1929, when the present decline in industrial activities set in, the occupational fatality rate for white male industrial policyholders has dropped 36 per cent; while the rate for colored male policyholders has dropped 44 per cent. These declines are somewhat greater than are indicated by the estimates of the National Safety Council for industrial workers generally. This organization estimates that there were 20,000 deaths as the result of industrial accidents in 1929, 17,500 deaths in 1931, and only 15,000 deaths in 1932. Our figures, based on insured lives, would indicate a lower toll for last year—not more than 13,000 deaths.

The rate for traumatism by falls, the leading means of accidental deaths of this character, declined 18.8 per cent for the year. Since 1929, the rate for this means of injury has declined 23.5 per cent. Occupational automobile accidents in 1932 was again second in importance to falls. The rate for this means of injury declined 21.7 per cent. This fall in the rate for 1932 is in contrast to the marked increase in the rate between the years 1930 and 1931.

Traumatism in mines and quarries displaced traumatism by machines, in 1932, as the third most important means of fatal occupational injury. The rate for traumatism in mines and quarries was 2.7 per 100,000; a decline of 10 per cent for the year, while the rate for traumatism by machines was 2.4 per 100,000; a decline of 22.6 per cent. The rates for these means of injury declined 42.6 per cent and 46.7 per cent, respectively, since 1929. Steam railroad accidents, which, a few years

(Continued on Page 787)

CARCINOMA OF THE BUCCAL MUCOSA*

End Results 1918-1926

BY CHARLES C. LUND, M.D.,† AND HILDA M. HOLTON, B.S.†

INTRODUCTION

LANE-CLAYPON[1] has recently shown in her extremely careful review and analysis of the literature of this subject that practically all statistics on the results of treatment of carcinoma of the buccal mucosa are presented in such diverse and frequently meaningless form that comparison of different studies is almost impossible. The best contributions are exemplified by those of Simmons[2] who compiled his case records on the outline forms introduced by the American College of Surgeons. If these forms are carefully and faithfully filled out on each case, very valuable statistical data may be accumulated. In the present study the general principles of the College of Surgeons classification were followed. The number of cases under consideration was so large that instead of using the College of Surgeons cards a mechanical card system was used. A form was drawn up that provided for inclusion of all the essential data allowed for on the College of Surgeons cards, as well as certain other items of especial interest. The use of mechanical cards will be referred to in a paper now in press[3]. Two important refinements of classification were made in order to demonstrate as certainly as possible that similar cases could be used when comparisons of the efficiency of different types of treatment were made.

First, the College classification with respect to examination of the glands of the neck has been in two groups—one in which the glands were enlarged, the second in which they were not. A possible error lies in the different interpretation that individuals may make in this regard. To show that this classification does not separate the cases into clear-cut groups with and without actual cancer in the neck as shown by pathological examination, one may turn to the following table in one of Simmons' papers.

TABLE 1

CARCINOMA OF BUCCAL MUCOSA

Quoted from Simmons

Pathological Examination of Removed Glands	
Clinical Evidence of Metastases	
Proved Cancer	12
Proved Not Cancer	10
No Clinical Evidence of Metastases	
Proved Cancer	7
Proved Not Cancer	13

Consideration of the fact that lymph nodes may be palpated in any adult neck and that in many cases of ulcerated carcinoma of the mouth there is a purely inflammatory enlargement of the glands for some time before they are invaded by carcinoma cells, makes the division of cases into the above two groups of no great value. For this reason, in many papers a further classification is made which is used not as a means of subdividing the groups separated as above, but as a classification of the whole number of cases under consideration. This consists of dividing cases into those that are operable and those that are inoperable. Here there is even greater possibility that many individuals will have different interpretations of the exact meaning of the terms. For these reasons it was decided to classify the cases into two groups: one, which may be called a "small" gland group, and the other, a "large" gland group. The former group includes all cases in which the glands are described as small, not enlarged, negative, up to 1 cm. in diameter, or are not mentioned at all. All others are classed as large. When this is done a table, as follows, results.

TABLE 2

CARCINOMA OF BUCCAL MUCOSA

Pathological Examination of Removed Glands	
Clinical Examination: Large Glands	
Proved Cancer	7
Proved Not Cancer	0
Clinical Examination: Small Glands	
Proved Cancer	16
Proved Not Cancer	17

This classification is far from perfect, but it does serve one purpose. It puts about one-third of the cases into a group in which, as will be seen later, the type of treatment used in this clinic in the years under consideration resulted in practically no cures. Many hopeless cases, on the other hand, were included in the small gland group because of the size of their local lesions. This group was then subdivided according to the recorded greatest measurements of the lesion.

The three divisions used were as follows: first, those cases up to 1 cm., secondly, those from 1.1-2.0 cm., and thirdly, any larger lesion. In some of our records such definite measures of size were not stated. If a lesion was called small it was placed with the 0-1.0 cm. cases, if medium with the next group, and if large with the third.

*From the Cancer Commission of Harvard University. This work was aided by an anonymous gift and by a grant from the Dalamar Fund of Harvard Medical School.

†Lund—Assistant Visiting Surgeon, Boston City Hospital. Holton—Technician, Huntington Memorial Hospital. For records and addresses of authors see "This Week's Issue," page 804.

DEFINITIONS OF TERMS EMPLOYED

"Cure" in this work means that five years elapsed since treatment, with the patient alive, without having had any local or distant recurrence or metastasis of the disease. If recurrence took place more than five years after the treatment, the case is still included as a "cure". In spite of the fact that the follow-up averages two years beyond the five-year period, this happened only three times. A new cancer developing in an area of mucous membrane distant from the scar of the original lesion and thought to be a development *de novo* is considered as a reoccurrence and the case classed as a cure provided he survives the five-year period without recurrence of the original lesion. This occurred five times among otherwise satisfactory cases. In addition to the above criteria all cases treated surgically must also have had positive pathological reports before being included as "cures". This last criterion was not applied to patients given radium treatment.

"Inconclusive" cases are those in which follow-up data are incomplete; cases that were apparently cured but died of intercurrent disease under five years, others, without evidence of disease, that were treated prophylactically with no recurrence, and "cures" in which no pathological examination was made. All others were classed as failures.

Cases that had two or more mouth cancers of independent origin during the period of the study were counted as many times as they had lesions. This did not greatly alter the results as there are only three "cures" among the twenty-six lesions on thirteen such patients. Two of these were in a patient who came in with a separate cancer inside each cheek.

"Primary" means cases that have had no previous surgical treatment. "Secondary" means cases that have had previous surgical treatment and in which the original disease persists or has recurred. Cases with a history of previous removal of buccal carcinoma elsewhere who came to us with a reoccurrence at a new point in the mouth have been classed as primary cases.

PLACE OF TREATMENT

A very close working coöperation exists between the Collis P. Huntington and the Massachusetts General Hospitals, and because of the small number of beds available at the Huntington Hospital, many were transferred to the Massachusetts General Hospital for surgical treatment. Such patients are classified in one group. A few patients seen in the clinic went elsewhere for treatment and are considered separately.

PATHOLOGY

The pathological specimens were all reviewed by Dr. Shields Warren and Dr. Channing C. Simmons, to whom we are greatly indebted. The detailed pathological considerations on these cases will be discussed in a later paper.

MATERIAL

All cases of carcinoma of the buccal mucosa entering the clinic at the Collis P. Huntington Hospital from 1918 to 1926, inclusive, were studied. During the first six years of the period these cases together with those seen only in the clinic at the Massachusetts General Hospital have been reported by Simmons[2]. In order to secure a large series for later statistical work and to form a proper evaluation as to the comparative merits of this new statistical analysis, it was decided to include the earlier period.

TABLE 3

CARCINOMA OF BUCCAL MUCOSA

MATERIAL

Conclusive		1084
Inconclusive		42
Lost	9	
Died without cancer	29	
Prophylactic	3	
Surgical "Cure," No Path. Report	1	
Total Carcinomas		1126
Total Patients		1113

The conclusive cases are divided into groups according to the definitions given earlier. In 957 cases the treatment was carried out at the Collis P. Huntington Memorial Hospital or the Massachusetts General Hospital. One hundred and twenty-seven cases were treated elsewhere.

The cases above referred to that were treated in the two hospitals are further classified with respect to previous surgical treatment and the admission examination of the glands in the neck, as follows:

TABLE 4

CARCINOMA OF BUCCAL MUCOSA

957 TREATED CASES

Primary		
Small Glands	519	
Large Glands	304	823
Secondary		
Small Glands	84	
Large Glands	50	134
Total		957

If table 4 had been made up on the basis of "clinical evidence of metastasis" versus "no

clinical evidence of metastasis" the number of cases classed in the more favorable groups would have been only about one-half those in the "small gland" group. As will be seen later, this will make the results of treatment seem much worse than were the results published by Simmons.

SURGICAL METHODS AND MORTALITY

Since many of the cases were treated surgically, a brief statement of the surgical principles followed and the operative mortality encountered is necessary.

In his papers Simmons has classified operations as either radical or incomplete. His classification and definitions are followed here.

The only change in surgical technique during the nine-year period was the introduction in 1924 of the Bovie electro-surgical unit. Very rapidly this machine came to be used in place of actual cauterization. About half the surgical cases had some postoperative roentgen-ray treatment. This was not adequate according to present standards and it is not considered in this report.

As will be seen later, a greater proportion of cases were treated surgically in the later years. This resulted in a somewhat increased operative mortality. The table following shows the total of operations on all cases at all stages of the disease and includes instances of combined surgical and radium treatment. Any death in the hospital is counted as an operative death.

TABLE 5

CARCINOMA OF BUCCAL MUCOSA

OPERATIVE MORTALITY

All Operations—All Stages of Disease

	1918-1920	1921-1923	1924-1926	Total
Operations	73	97	141	311
Cases	58	80	108	246
Deaths	0	2	8	10
Mortality (Cases)	0	2.5	7.4	4.0

Radical Operations: 49 Cases, 4 Deaths

Surgical treatment was the first choice of treatment for all suitable cases and was given to the majority of favorable cases. The indications for surgery were expanded during the period of the study so that a greater proportion of cases were so treated in the later part of the period. Local operations only were done on patients with extremely small lesions or on those that were not suitable risks for the radical operation.

B. RADIUM TREATMENT

From 1918 to 1926 the radiation treatments were inadequate according to present conceptions and detailed analysis is not worth while. The data in the records are not sufficient to estimate the tissue dosage in relation to the size and shape of the lesion. In the early part of the period frequent small doses of surface treatments were being given, some with heavy, some with light screening. The use of interstitial implants of "glass" radium seeds were just beginning. After 1920 nearly all the radium treatments in these cases were given by this method, and in 1923 the use of "gold" implants to displace "glass" began. The cures among the primary cases with "small" lesions and glands received, respectively, 125, 375, 625, and 692 millicurie hours. Of these cases two had positive pathological examinations. The failures received 64, 94, 100, 273, 477, 625, 726, 1817, and 2125 millicurie hours.

The radium "cures" in lesions over 1 cm. in diameter were so few that the individual doses to failures will not be listed. The "cures", however, received the following doses of radium: 410, 500, 625, 1125, 1750, 2000, 3125, 4317 millicurie hours respectively. Positive pathological reports are available for two of these cases. The doses given to the failures averaged no larger. Some of the smallest doses were due to factors beyond our control, such as the failure of the patient to return for further treatment. Other small doses were purposely given as placebo treatments where it was recognized that even an attempt at palliation was inadvisable.

The next table will show the results of radium treatment.

TABLE 6

CARCINOMA OF BUCCAL MUCOSA

155 PRIMARY CASES WITH "SMALL" GLANDS TREATED BY SURGERY

Results of Treatment

Size of Lesion	1918-1920		1921-1923		1924-1926		Total		%
	Cases	"Cures"	Cases	"Cures"	Cases	"Cures"	Cases	"Cures"	"Cured"
0-1.0 cm.	3	0	7	3	6	5	16	8	50%
1.1-2.0 cm.	9	2	19	5	30	7	58	14	24%
2.1 cm.+	24	3	29	5	28	7	81	15	19%
Total	36	5	55	13	64	19	155	37	24%

TABLE 7

CARCINOMA OF BUCCAL MUCOSA

341 PRIMARY CASES WITH "SMALL" GLANDS TREATED BY RADIUM

Results of First Six Months of Treatment

Size of Lesion	1918-1920 Cases	1918-1920 "Cures"	1921-1923 Cases	1921-1923 "Cures"	1924-1926 Cases	1924-1926 "Cures"	Total Cases	Total "Cures"	% "Cured"
0.-1.0 cm.	5	1	8	4	0	—	13	5	39%
1.1-2.0 cm.	7	0	25	0	6	1	38	1	3%
2.1 cm.+	86	2	126	3	78	2	290	7	3%
Total	98	3	159	7	84	3	341	13	4%

C. COMBINED SURGERY AND RADIATION

In a few cases combined surgery and radium was used. This usually meant the introduction of a few "seeds" into any suspicious area at the time of operation when the surgeon felt that he might be unable to remove the whole growth. The results of this treatment are as follows:

PRIMARY CARCINOMA WITH LARGE GLANDS

In this group were 304 cases. Seven were treated by radical surgery, 13 by incomplete surgery and three by combined surgery and radiation with no cures. Two hundred and eighty-one were treated by radiation with one cure. In this case we had pathological proof of the primary lesion which was in the tonsil.

TABLE 8

CARCINOMA OF BUCCAL MUCOSA

23 PRIMARY CASES WITH SMALL GLANDS TREATED BY COMBINED SURGERY AND RADIATION

Results of Treatment

Size of Lesion	1918-1920 Cases	1918-1920 "Cures"	1921-1923 Cases	1921-1923 "Cures"	1924-1926 Cases	1924-1926 "Cures"	Total Cases	Total "Cures"	% "Cured"
0-1.0 cm.	0	—	1	0	0	—	1	0	0
1.1-2.0 cm.	0	—	5	3	2	1	7	4	57%
2.1 cm.+	5	0	6	0	4	0	15	0	0
Total	5	0	12	3	6	1	23	4	17%

It is well known that the degree of malignancy and the success of treatment vary with the location of the disease in the mouth. The whole series of subsidiary tables on which the last tables are based are not of sufficient importance to give in detail, but table 9 shows the results of treatment according to the size of lesion and location of tumor.

The glands, on the other hand, were not examined and may have been inflammatory. Entirely new methods must be devised if this group of cases is to receive any except palliative treatment.

RECURRENT CARCINOMA

In the tables presented up to this point the results of the first operation (two-stage radical

TABLE 9

CARCINOMA OF BUCCAL MUCOSA

519 PRIMARY CASES WITH SMALL GLANDS

Results in Relation to Location

All Types of First Treatment

Location	Size 0.-1.0 cm. Cases	0.-1.0 cm. "Cures"	1.1-2.0 cm. Cases	1.1-2.0 cm. "Cures"	2.1 cm.+ Cases	2.1 cm.+ "Cures"	All Cases Cases	All Cases "Cures"	% "Cured"
Tongue	13	3	37	8	141	3	191	14	7%
Floor	3	1	14	3	41	4	58	8	14%
Cheek	6	2	13	3	50	6	69	11	16%
Upper Jaw	0	—	7	1	27	3	34	4	12%
Lower Jaw	4	4	12	2	52	4	68	10	15%
Palate	3	3	10	2	29	1	42	6	14%
Tonsil	1	0	10	0	46	1	57	1	2%
Total	30	13 (43%)	103	19 (18%)	386	22 (6%)	519	54	11% (11%)

operations counting as one in this regard) or the first series (up to six months) of radium treatments only have been considered. Many of the cases in which the first treatment failed had further surgery or radiation later. This was seldom successful, only one case being cured out of about one hundred attempts, although in three more instances the patients are now without disease, but five years have not elapsed since the end of treatment and they cannot be considered as cures. Poor results were also obtained when cases came to us recurrent after surgery elsewhere. Table 10 shows these latter cases.

TABLE 10

CARCINOMA OF BUCCAL MUCOSA

134 RECURRENT CASES
1918-1926

Location	Surgery		Radiation		Surgery and Radiation	
	Cases	"Cures"	Cases	"Cures"	Cases	"Cures"
Tongue	3	0	31	1	1	1
Floor	0	0	15	0	0	0
Cheek	2	0	19	0	0	0
Upper Jaw	1	0	11	0	1	1
Lower Jaw	4	0	20	0	0	0
Palate	0	0	3	0	0	0
Tonsil	0	0	20	0	0	0
Total	10	0	119	1	2	2

RESULTS IN CASES TREATED ELSEWHERE

There were also 127 cases that were seen in clinic but not treated at either the Huntington or the Massachusetts General Hospital. Of these six were inconclusive, 94 primary, and 27 secondary. These were followed as carefully as our own and studied according to similar standards and definitions, except that the absence of pathological data was not considered cause for exclusion.

Of 67 primary cases with small glands, three were cured. Of 27 primary cases with large glands, none were cured. Of the 27 recurrent cases, three were cured. The size distribution of these cases was at least as favorable as it was in those treated at this hospital.

RADICAL VS. INCOMPLETE SURGERY

Surgeons have recognized for a long time that small cancers, especially of the papillary type, may be treated successfully by local excision alone. In larger and deeper tumors a radical operation is supposed to be better treatment because it is possible to obtain a cure in a few cases with diseased glands. The next table compares the results for the two types of operation according to the size of the lesion.

These figures show that the results for the two types of operation were about equal, although the radical operation gave slightly better results in the small and medium lesions, and the local operation much better results in large ones. It has frequently been stated, without

TABLE 11

CARCINOMA OF BUCCAL MUCOSA

LOCAL VS. RADICAL OPERATION

Size of Tumor	Local Cases	"Cures"	%	Radical Cases	"Cures"	%
Small	15	7	47%	1	1	100%
Medium	45	8	18%	13	6	46%
Large	55*	14	25%	19	1	5%
Total	115	29	25%	33	8	24%

*There were seven additional cases, all failures, in which palliative operations alone were attempted.

giving data, that the reason both types of operation have shown nearly equal results is because the local operation only was used for proportionately more of the smaller cases. This table bears this out to a slight degee. If, however, one confines his consideration to the large cases only, there is a great difference in favor of the local operation, which is not to be explained by the above argument. The variation of results in different parts of the mouth might explain this apparent discrepancy. As has been seen already, the tongue and floor cases are among the most malignant. For large tumors of these locations alone local operation was done twenty-five times with 24% of cures while the radical operation was done seventeen times with no cures. Certainly some factor that has not yet been brought out in this analysis entered into the selection of treatment for the cases. The data on the thickness of the tumor, for instance, were so incomplete as to be of no value, and variations of thickness alone may explain why the lesser operation gave these better results. There are many papillary carcinomas of wide extent on the tongue that are curable by local operation and possibly it was this type of case that was cured in this group. Apparently, at this point in the discussion, it will have to be admitted that there is no great weight of evidence that the radical operation cures many cases that would not have been cured by a well-executed local operation.

It will also be admitted that any cancer cells left behind after any type of operation will almost certainly eventually lead to a clinical recurrence or metastasis. If glands are definitely invaded, but not yet appreciably enlarged, recurrence can only be avoided by removal of the glands, or, theoretically, by sterilization of them by x-ray or radium. There are no data on the latter possibility. Data on the former follow:

TABLE 12

CARCINOMA OF THE BUCCAL MUCOSA

RESULTS OF RADICAL OPERATIONS

Cases with Glands under 1 cm. Diameter

	Cases	"Cures"	%
Glands Positive	16	3	19
Glands Negative	17	5	29

The results already presented on cases with glands over one centimeter diameter show that the radical operation was done seven times without success.

Further discussion of the question of radical versus local surgery will be made later, in another paper, after the data on details of pathology and certain other aspects of this problem have been presented.

SURGERY VS. RADIATION

At the start it must be emphasized that the patient being in reasonably good condition and the lesion within operable limits, surgery was considered to be the treatment of choice in this series. Because of a desire to do something for every patient, many advanced cases were given some radium without any expectation that it would result in more than psychic benefit. For these two reasons the only group of cases at all comparable with the surgical ones is the group of those with very small lesions. But, in this group, an opposing factor makes comparison difficult, that is, that pathological check has not been insisted on. However, all the clinical diagnoses were made by surgeons of great experience in this type of cancer and were as accurate as clinical diagnoses ever can be. With these reservations the following data from tables 6 and 8 will be brought together.

When one turns to the larger lesions treated by radium, the results were appallingly poor (see table 9). This is to be explained in part by the inadequate dosage used at that time.

The series of cases receiving combined surgery and radium, although small, is of some interest. In large lesions this treatment was not successful at all, because a few seeds were inserted when the surgeon found that it was impossible to remove all of the growth. Of the seven medium-sized lesions that had this treatment, four were "cured", which compares favorably with 24 per cent of cures from surgery alone in cases of the same size.

It is realized that both these radiation groups are extremely small, and very guarded inferences must be drawn from them. It is suggestive, though, that with comparatively crude methods of radiation, results that were roughly comparable to the surgical results were obtained in these particular groups of cases.

SUMMARY

1. Five-year end results are presented on 1126 carcinomas of the mouth seen at the Collis P. Huntington Memorial Hospital from 1918-1926, inclusive.

2. The cases have been analyzed and presented according to a classification that is slightly modified from that of the American College of Surgeons.

3. This classification is designed to allow an easy and fair comparison between cases treated surgically and cases treated by radiation in the same or different clinics.

4. It is shown that small cancers of the mouth are curable in a much higher percentage of cases than has been realized.

TABLE 13

CARCINOMA OF BUCCAL MUCOSA

SMALL LESIONS—SURGERY VS. RADIUM

	1918-1920		1921-1923		1924-1926		Total	
	Cases	% "Cured"	Cases	% "Cured"	Cases	% "Cured"	Cases	% "Cured"
Radium	5	20	8	50	0	—	13	39
Surgery	3	0	7	43	6	83	16	50

It will be seen that up to 1923 the results of surgical and radium treatment in this group were approximately the same. Whether with radium treatment, results comparable to those in the later surgical series would have been obtained, we do not know. Local operation resulted in cure in five out of the six cases in the 1924-1926 group. If local radiation treatment had been given that would have sterilized an amount of tissue comparable to that removed by the local operation, the same results could have been obtained.

5. Data have been presented and discussed on the problem of the best form of treatment, but no final conclusions have been drawn as the study of this subject is incomplete.

REFERENCES

1 Lane-Claypon, J. E.: Report of Cancer of Lip, Tongue and Skin. British Ministry of Health. Reports on Public Health and Medical Subjects. No. 59, 1930.

2 Simmons, C. C.: Cancer of the mouth. Surg. Gynec. Obst. 43: 377-382 (Sept.) 1926.

Cancer of the buccal mucosa. Ann. Surg. 92: 681-693, 1930.

The treatment of oral cancer. Am. J. Roentgenol. 26: 5-11, 1931.

3 Lund, C. C., and Holton, H. M.: End results of carcinoma of lip. To be published in Am. J. Roentgenol.

DIPHTHERIA IMMUNIZATION AND THE PRIVATE PRACTITIONER*

BY GAYLORD W. ANDERSON, M.D.,† AND GEORGE H. BIGELOW, M.D.†

THERE is a quite general feeling among physicians that their personal incomes are impaired by the services offered by health departments. Many are silent about it, feeling that in the long run the public may benefit. Others, particularly during these distressing times, are articulate and refer to the effective health officer as an enemy of the private practitioner.

This is disturbing to the medical health officer who, in addition to meeting his public responsibility reasonably, hopes not to become a pariah among his professional brethren. He rationalizes the offering of preventive services by saying that demonstration is an effective method of education, and that this education is increasing the practice of those physicians who are prepared to give these services in their private offices. But as figures on the extent of preventive medical practice in the private office are so difficult to obtain, the two conflicting opinions are largely based on a few personal experiences and debate getteth no whither.

So it occurred to us that through our records of diphtheria toxin-antitoxin distribution we might obtain some relatively accurate data in this regard. The Department prepares toxin-antitoxin in 20 cc. bottles for clinic use and in one cc. ampoules for individual use. Thus the number of ampoules used in any community would give some index of the extent of diphtheria immunization in private practice. Comparison of these figures with the number of children immunized in the publicly conducted clinics will therefore give some measure of the extent to which the clinics either interfere with or stimulate private immunization. Although there is a certain amount of wastage, this would be fairly even in a large group of communities, so that the errors thus introduced would tend to balance each other. The same balancing of errors would exist for the private immunizations using bottled material, and the even more occasional clinic immunizations using toxin-antitoxin in ampoules.

We feel, then, that if as the clinic immunization rate goes up that of the ampouled toxin-antitoxin goes down, the diphtheria immunization clinic is taking business from the doctor's office, whereas if they both go up together the education connected with the clinic is making business for the private office.

A group of 26 cities and towns with a total population of over 1,600,000 have been taken because of their accurate immunization and distribution data. Table I shows the ampoule distribution for the years 1925-1931, inclusive, in these communities grouped according to the intensity of the immunization programs conducted.

TABLE I

AVERAGE DISTRIBUTION OF TOXIN-ANTITOXIN AMPOULES

Average Clinic Immunization Rate per Year per 1,000 Population	Average Ampoules per Year per 1,000 Population
Less than 5	4.1
5-10	4.8
10-15	6.2
15-20	7.1
20+	10.0

In the foregoing table no attempt has been made to compare individual cities, all communities over 20,000 population that were acceptable for study being compared by groups. When an attempt is made to compare communities which are similar except for their immunization programs, the differences in ampoule distribution are brought out very strikingly. This is shown in Table II for two pairs of communities.

TABLE II

COMPARISON OF IMMUNIZATION RATES AND AMPOULE DISTRIBUTION IN CERTAIN CITIES

	Average Clinic Immunization Rate per Year per 1,000 Population	Average Ampoules Supplied per Year per 1,000 Population
Fall River	16.9	9.8
New Bedford	3.3	2.5
Cambridge	15.8	5.0
Somerville*	0.0	1.5

*In 1932 Somerville has carried on an active clinic immunization campaign. It will be interesting to study its effect on orders for ampoules from this city.

Fall River and New Bedford are perhaps the most closely comparable cities in Massachusetts. Situated less than twenty miles apart, they have almost identical populations, both as to size and racial makeup, and both present similar industrial and economic problems. Cambridge and Somerville are adjacent cities of comparable size in the Metropolitan area. Although perhaps they are not so similar to one another as the former pair, they are so similar that the

*From the Massachusetts Department of Public Health.

†Anderson — Director, Division of Communicable Diseases, Massachusetts Department of Public Health. Bigelow—Commissioner of Public Health for Massachusetts. For records and addresses of authors see "This Week's Issue," page 804.

difference in the figures in Table II is of considerable significance. The great differences in the extent of immunizations in private practice as measured by the ampoule distribution are hard to explain on any basis other than that the conduct of the public clinics has created a demand for a similar service in the physicians' offices.

Of considerable interest likewise are the figures for Attleboro and Brookline.

TABLE III

COMPARISON OF IMMUNIZATION RATES AND AMPOULE DISTRIBUTION IN CERTAIN COMMUNITIES

	Average Clinic Immunization Rate per Year per 1,000 Population	Average Ampoules Supplied per Year per 1,000 Population
Attleboro	22.8	22.6
Brookline	10.6	26.1

These are, to the best of our knowledge, the only two of the group studied in which a systematic house to house canvass has been made by public health or visiting nurses to urge immunization upon the parents. That they should have shown the highest level of private immunization of any communities studied seems more than mere chance. It might, of course, be objected that Brookline, which is a wealthy suburb of Boston, is hardly a fair selection. The same criticism cannot certainly be leveled at Attleboro, which is a strictly industrial community. The conclusion is inescapable that such a program has created an unusual demand for private service even though free service has been obtainable in public clinics.

In addition we have studied the public immunization rates, which we have shown are roughly proportional to the private immunization rates, in relation to the decrease in incidence of diphtheria. For this we have taken the same 26 communities and averaged the diphtheria incidence for two three-year intervals, 1922-1924, and 1929-1931, and after grouping these communities, as before, on the basis of clinic immunization rates have shown the percentage improvement for each group.

TABLE IV

DIPHTHERIA CASE RATES COMPARED WITH RECORDED IMMUNIZATIONS

Average Clinic Immunization Rate per Year per 1,000 Population	Average Diphtheria Case Rates 1922-1924	1929-1931	Per Cent Decrease
Less than 5	156	128	17.9
5-10	222	94	57.5
10-15	197	91	54.0
15-20	205	68	66.6
20+	187	47	74.9
State of Massachusetts	207	78	62.3

Since the higher the immunization rate the greater the proportional decrease in the prevalence of the disease, it would suggest that diphtheria immunization has a relation to community as well as individual incidence. Yet it has become rather the fashion of late to question this as well as everything else biological!

CONCLUSIONS

I. It appears that in the 1,600,000 population in 26 communities studied those showing the highest public immunization rate against diphtheria show also the highest private immunization rate. In other words, presumably because of the popular education necessary for all community efforts that obtain results, either the health officer and the private physician both immunize or neither immunizes.

II. Those communities doing the most public (and therefore private) immunizations show the greatest improvement over seven years in incidence of diphtheria. In other words, there is a relationship between the number of immunizations performed and the subsequent prevalence of diphtheria.

CANCER MORTALITY OF MASSACHUSETTS, 1860-1929

BY FREDERICK L. HOFFMAN, LL.D.*

FOR probably no other state of the United States is it possible to trace with a like degree of accuracy and completeness the course of mortality in the case of a single disease as is possible for Massachusetts. In the following discussion of the change in the mortality of cancer since 1860, I have utilized the state returns by age and sex with calculations for each decennial period and the required rates per 100,000 of population based on the federal census returns for each decennial period. The record, to my knowledge, is the most complete available and the most interesting for a long period of years accessible to the student of the American cancer problem. The facts are presented in three double tables or respectively for males, females and for both sexes combined, according to divisional periods of life. The mortality data used in this discussion were kindly furnished by the statistical section of the Army Medical Library Washington, D. C.

It may be pointed out in this connection that

*Hoffman—Consulting Statistician, Prudential Insurance Company. For record and address of author see "This Week's Issue," page 804.

in 1931 cancer was the second leading cause of death in the United States, the actual mortality for both sexes combined being 118,141, equivalent to a rate of 98.9 per 100,000 of population compared with 253,985 deaths from diseases of the heart, or at the rate of 212.7 per 100,000. For Massachusetts, the federal statistics show a cancer mortality for 1931 of 5,834 deaths or at the rate of 136.3 per 100,000, being exceeded in numerical importance only by diseases of the heart which show a rate of 287.4. The marked excess of the Massachusetts cancer death rate over that of the United States registration area, which includes all the states except Texas, naturally raises a number of important questions which cannot be discussed on this occasion. Reference may be made to my detailed study of the cancer mortality of Boston for a period of years, included in the reports on my San Francisco Cancer Survey.

Table one of the present discussion shows the cancer mortality for Massachusetts 1860-1929 in seven decennial periods, representing an aggregate mortality from cancer during the seventy years, of 54,140 males or an average rate of 60.9 for the whole period, starting with a rate of 18.2 for the decade ending with 1869 and progressively increasing to a maximum of 103.9 in 1920-29. The progressive increase cannot be attributed merely to changes in the age distribution of the population or improved diagnosis but may be looked upon as a genuine increase, certainly at all ages over thirty years. The rates as given for each period of life are specific rates and not affected by changes in the age distribution of the population. They show an increase during the last twenty years from 18 per 100,000 at ages 30-39 to 21 in round figures. At ages 40-49 the increase has been from 69 to 74; at ages 50-59, from 206 to 248; at ages 60-69, from 442 to 577; at ages 70-79, from 764 to 998; at ages 80 and over, from 954 to 1267. It is therefore indisputably shown that the cancer deaths of males in Massachusetts have progressively increased during the last twenty years, leaving out of consideration for the time being the earlier figures which, of course, are in much more marked contrast.

CANCER MORTALITY IN MASSACHUSETTS BY AGE PERIODS—MALES—1860-1929

	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	1860-1929
	Deaths							
Under 5	24	20	11	28	56	72	79	290
5- 9	4	10	4	9	23	41	42	133
10-14	1	4	8	17	18	27	45	120
15-19	10	10	18	23	34	44	59	198
20-29	38	39	72	104	142	223	200	818
30-39	74	88	180	259	405	522	646	2174
40-49	124	222	406	607	1060	1588	1941	5948
50-59	239	431	704	1170	1942	3202	4742	12430
60-69	315	599	958	1560	2428	3865	6597	16322
70-79	258	452	814	1073	1694	2874	4744	11909
80 & Over	94	123	252	369	547	936	1477	3798
Total	1181	1998	3427	5219	8349	13394	20572	54140
	Rates per 100,000 Population							
Under 5	3.1	2.4	1.1	2.3	3.6	4.0	4.2	3.2
5- 9	0.6	1.3	0.4	0.8	1.7	2.5	2.2	1.6
10-14	0.2	0.5	0.9	1.6	1.4	1.7	2.5	1.5
15-19	1.6	1.3	2.0	2.1	2.6	3.0	3.6	2.5
20-29	3.2	2.7	3.8	4.3	4.9	7.1	6.3	5.0
30-39	7.7	7.7	12.2	13.0	16.1	18.1	20.7	15.4
40-49	17.2	25.0	36.8	42.9	57.3	69.1	73.7	54.5
50-59	51.2	70.6	92.6	123.4	161.4	206.0	248.0	166.7
60-69	114.3	157.0	196.7	267.6	347.5	441.8	577.0	367.3
70-79	214.6	270.3	360.7	393.7	533.9	763.7	998.3	609.3
80 & Over	288.2	281.0	419.1	501.5	643.7	953.7	1267.3	745.0
Total	18.2	25.6	35.2	42.5	55.2	75.6	103.9	60.9

Table two gives the same facts for females, showing a total mortality of 94,979 during the seventy years under review and an average death rate for the whole period of 101.6 per 100,000 of female population. The increase in the rate has been progressive from a minimum of 36.9 during 1860-69 to a maximum of 146.6 during 1920-29. The increase in the rates during the last twenty years has been progressive and marked at ages fifty and over. At ages 50-59 the increase has been from 347 in round figures to 362; at ages 60-69, from 590 to 635; at ages 70-79, from 868 to 1004; at ages 80 and over, from 1111 to 1294. For all ages combined the increase has been from 126.2 during 1910-19 to 146.6 during 1920-29. Here is further evidence of a persistent increase in the relative frequency of cancer at all ages among Massachusetts women, fifty years and over. The increase, of course, is much more marked when comparison is made

with the earlier periods, or from a rate of 36.9 for the period 1860-69 to 146.6 during 1920-29.

Table three shows the combined mortality for both sexes in similar form. The aggregate mortality during the seventy years for both sexes combined was 149,119. The rate has increased from 27.8 per 100,000 in 1860-69 to 125.7 in 1920-1929. For the entire period the average cancer death rate was 81.7 per 100,000 or respectively 60.9 for males and 101.6 for females.

I regret that I have not as yet obtained details by specific organs and parts although I may be able to do so on a future occasion, but for the time being it is sufficient to present the evidence of a very disconcerting increase in the relative frequency of cancer in the Massachusetts population, and its outstanding importance as the second leading cause of death.

CANCER MORTALITY IN MASSACHUSETTS BY AGE PERIODS—FEMALES—1860-1929

	1860-1869	1770-1779	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	1860-1929
	Deaths							
Under 5	22	21	12	35	49	64	71	274
5- 9	5	3	5	13	14	23	37	100
10-14	4	6	8	14	14	17	25	88
15-19	6	11	19	20	40	47	51	194
20-29	74	75	150	170	207	262	285	1223
30-39	230	407	651	908	1130	1382	1478	6186
40-49	505	950	1450	2053	2852	3881	4396	16087
50-59	652	1026	1919	2894	4014	5590	7248	23343
60-69	577	960	1618	2659	3982	5869	8099	23764
70-79	352	649	1143	1691	2794	4296	6168	17093
80 & Over	135	237	418	617	986	1754	2480	6627
Total	2562	4345	7393	11074	16082	23185	30338	94979
	Rates per 100,000 Population							
Under 5	2.9	2.5	1.3	2.9	3.2	3.6	3.9	3.1
5- 9	0.7	0.4	0.5	1.2	1.0	1.4	2.0	1.2
10-14	0.6	0.8	0.9	1.3	1.1	1.1	1.4	1.1
15-19	0.9	1.4	1.9	1.7	2.9	3.1	3.0	2.4
20-29	5.3	4.5	7.0	6.3	6.6	7.7	8.1	6.8
30-39	22.3	32.4	41.8	44.9	44.4	47.3	46.0	42.5
40-49	70.0	100.7	122.7	139.8	152.2	167.5	162.7	143.5
50-59	135.3	160.0	228.2	277.0	313.4	346.8	362.4	295.4
60-69	182.8	229.3	298.6	390.5	482.4	589.5	635.0	470.3
70-79	224.3	303.3	415.0	506.8	681.4	868.5	1003.7	684.0
80 & Over	251.2	327.0	431.2	546.8	765.0	1110.9	1293.9	813.7
Total	36.9	51.8	71.2	85.5	102.1	126.2	146.6	101.6

CANCER MORTALITY IN MASSACHUSETTS BY AGE PERIODS—PERSONS, 1860-1929

	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	1860-1929
	Deaths							
Under 5	46	41	23	63	105	136	150	564
5- 9	9	13	9	22	37	64	79	233
10-14	5	10	16	31	32	44	70	208
15-19	16	21	37	43	74	91	110	392
20-29	112	114	222	274	349	485	485	2041
30-39	304	495	831	1167	1535	1904	2124	8360
40-49	629	1172	1856	2660	3912	5469	6337	22035
50-59	891	1457	2623	4064	5956	8792	11990	35773
60-69	892	1559	2576	4219	6410	9734	14696	40086
70-79	610	1101	1957	2764	4488	7170	10912	29002
80 & Over	229	360	670	986	1533	2690	3957	10425
Total	3743	6343	10820	16293	24431	36579	50910	149119
	Rates per 100,000 Population							
Under 5	3.0	2.4	1.2	2.6	3.4	3.8	4.1	3.2
5 -9	0.7	0.8	0.5	1.0	1.3	2.0	2.1	1.4
10-14	0.4	0.6	0.9	1.5	1.2	1.4	1.9	1.3
15-19	1.2	1.4	1.9	1.9	2.8	3.0	3.3	2.4
20-29	4.3	3.7	5.5	5.3	5.8	7.4	7.2	6.0
30-39	15.3	20.7	27.4	29.1	30.3	32.8	33.5	29.2
40-49	43.7	64.0	81.3	92.2	105.1	118.5	118.8	99.6
50-59	93.9	116.4	163.8	204.0	239.8	277.7	306.5	232.9
60-69	150.8	194.9	250.4	333.8	420.6	520.4	607.6	422.1
70-79	220.1	288.9	390.5	456.0	617.1	823.2	1001.3	651.2
80 & Over	265.1	309.7	426.6	528.9	716.8	1050.6	1283.8	787.3
Total	27.8	39.1	53.8	64.6	79.2	101.3	125.7	81.7

THE PRESENT DEVELOPMENT OF PSYCHIATRIC TECHNIQUE IN THE CRIMINAL PROCESS*

BY FRANCES L. ROTH, LL.B.‡

IT was a judge of the Superior Court in Connecticut who told me ten years ago that the Criminal Term was the most unsatisfactory session for all judges. It is obvious that this feeling of dissatisfaction must come to all conscientious judges who are called upon daily to pass judgment on offenders for a single anti-social act with little or no knowledge of those who stand before them. Some judges have been content to remain dissatisfied, others have devised ways to secure the facts.

Eight years ago, I received an invitation to visit the Bureau of Domestic Relations in Cleveland, then under the guidance of Mr. C. Burt Corlett. I had been appointed Assistant City Attorney assigned to the Bureau of Domestic Relations, and the new methods in use in Cleveland, were of special interest to me. I found trained social workers investigating *ex-parte* divorce petitions, in the interest of the minor children involved. Efforts at reconciliation were handled by this Department, as well as careful check-ups on payments of alimony. Delighted at the progress made in this field, I congratulated Chief Justice Powell on securing from the Ohio Legislature such forward looking legislation. He smiled, and pointed to a section of the Ohio General Code enacted in the Eighties.† This Section granted the Chief Justice power to appoint as many Court Constables as he deemed necessary. Here was a Judge who refused to sit day after day and pass orders affecting the lives of hundreds of minor children, unless he was given the benefit of a thorough and impartial investigation in each case. To this day, the psychologist and psychiatrists working in Judge Hoffman's Family Court of Cincinnati are known as court constables.

As a result of ever-growing dissatisfaction with the existing system, there has grown up in the last decade a variety of court services designed to place before the judge the history of each offender, his educational opportunities, social background, physical disabilities, mental age, and personality traits; in other words, his assets and liabilities. When a Criminal Court becomes interested in the assets of the offender and the possibility of redeeming them, you find that the court has swerved definitely from the protective and punitive methods of the Criminal Law, and has become in reality a clinic.

The best illustration I have found of this transition is contained in the 1931 report of the Philadelphia Municipal Court, in which this appears, "The Medical Department is in charge of a Medical Director, and consists of one specialist in children's diseases, one ophthalmologist, four experts in psychiatry, and two psychologists. In addition there are four women physicians. Under the supervision of the Medical Director also, are the Dental Department which holds Clinics daily, and the Nursery, in which the children of all people transacting business in the Court are cared for, fed, and amused. The work of the physician is aided by thirteen nurses." . . . "The Medical Department was established primarily for the purpose of diagnosis, that the Judges might be better informed in cases where there was an indication of physical or mental defect which could not be diagnosed by a layman." If you examine that report you will find that the Clinic has gone from the diagnostic end into many fields of treatment and cure. There is a definite tie-up with every city hospital and institution. The Director, Doctor Baldy, secures his psychiatrists on a part-time basis and the same doctors are engaged in observation and treatment at the hospitals and institutions.

Service of this type has increased step by step as the judges have demanded more knowledge of the offender. It has spread from the delinquent, dependent and neglected child to the disorderly adolescent, the adult sex offender, deserter or non-supporter of wife and child, and now to the adult convicted of a criminal offense. When judges become dissatisfied with the sources of information provided by statute, you find that there is no end to their desire for knowledge. I think you would be within the realm of reason, if you concluded after reading the report that the Municipal Court of Philadelphia is no longer a court, but a clinic to which the patients are reported because of symptoms of antisocial behavior.

I inquired of Doctor Baldy last spring concerning the statutory provisions under which this type of examination and treatment is made. He smiled, and said, "No one has taken us to the Supreme Court. We tell each lawyer that the examination is for the best interest of his client, that the results will be carefully checked and reported to him, and they fall in line. We all work together in the best interests of community and offender."

Here again you find that where the facilities are supplied for scientific examination and the coöperation of the Bar is sought, there is no difficulty over the lack of statutory provisions for such examinations.

*Read before the Section on Criminal Law and Criminology at the meeting of the American Bar Association, October, 1932.

†Ohio General Code—Section 1692, Chapter 103.

‡Roth—Assistant City Attorney, City Court of New Haven, Connecticut. For record and address of author see "This Week's Issue," page 804.

Let me pause to give you a general idea of the extent of the use of the psychiatrist in the courts. In 1928, a National Crime Commission Survey, conducted by Dr. Winfred Overholser, reported that of eleven hundred and sixty-eight courts of all grades of Criminal Jurisdiction including Juvenile Courts, 110, or about ten per cent, claimed to have the services of psychiatrists whether or not they had a regularly organized clinic. The National Mental Hygiene Society has just completed a new Directory of Psychiatric Clinics. For the purpose of this paper, Dr. Stevenson, a director of the National Committee of Mental Hygiene, listed 43 Court serving Clinics. Of these, he points out, only eight are full-time adult court services.

Because of the prevailing informality of procedure in juvenile courts, the judges have made use of psychiatric clinics established by the community and supported by private or public funds. They do not hesitate to enlist the aid of all existing social agencies, whether they are public or private. This process I find has already been extended into the family court, and now into the criminal adult court by the simple process of calling for scientific reports to the judges. In other words the "punishment only" idea of the criminal law is being defeated without changing the written law.

Notable work with juvenile delinquents is being done by Dr. William Healy and Dr. Augusta Bronner of The Judge Baker Foundation in Boston. This clinic furnishes the Boston Juvenile Court with a careful diagnosis in each case, and is then able to carry out the treatment advised and follow the case for a long period of years. In the past year and a half, a mental and physical examination of any juvenile delinquent before commitment to a state training school, has been made mandatory*. In addition to the help thus given the court and child, the value of the material gathered for scientific research cannot be overestimated.

There have been important developments recently in the adult Court clinics. No two are alike. I was afforded the opportunity of examining the Psychiatric Clinic of the Court of General Sessions in New York City, established within the past six months. The Director in charge is Dr. Menas Gregory, who is also the Director of the Psychopathic Division of the Hospital Unit, with all the provisions necessary for observation. The clinic provides a routine physical and mental examination, obtains a social history of each case, and furnishes to the court a psychiatric report on every person who has been convicted of a felony, before the prisoner is presented for sentence. Dr. Gregory informs me he has had the coöperation of defense attorneys. His reports are known to be absolutely impartial. The clinic is prepared to render them to the judge, prosecutor, and defense counsel and also to explain the conclusions reached in the report. The report itself is most comprehensive, and divided into three parts. The first section contains the opinion of the examiner as to the sanity or insanity of the prisoner in accordance with the legal definition. The second section contains a short concise history of the offender, pointing out physical defects if any, and also furnishes a clear estimate of his personality traits. It is interesting to note that where scientific terms are used they are explained in lay language. (I trust that the psychiatrists who read this paper will make a special note of this helpful practice.) The last section of the report is headed "Possibilities." Under this caption is listed each institution that the State provides for the care and cure of the offender. The institutions which would not benefit the prisoner are checked off, leaving those that would best suit the needs of the prisoner before the Bar. If the type of treatment or training recommended has not been provided by the State, a note is added calling the judge's attention to that fact. Each week a conference is held between judges and doctors. What better way for assisting the offender and securing additional facilities for the care of mentally ill offenders could possibly be devised?

Many of you have been in court and heard four young men plead guilty to the same crime. Have you sympathized with the judge who must decide what to do with them? The wise judge knows of the first offender myth. Often that prisoner is the one who has a record as long as his arm in another state. If the accused is represented by counsel, the judge receives an impassioned plea for clemency, with little or nothing in the way of corroborative facts. Of some assistance is a short statement from the prosecutor. Compare that with Dr. Gregory's clear, concise, scientific report on each man. The value of the diagnosis and prognosis submitted by him does not end here. The Probation Department receives information of great value, and the penal, correctional, or institutions for mental defectives to which the prisoner may be committed are assisted in classifying him when he reaches the institution. From the day that the report is made a history of the offender is kept, and this history forms a source of reliable research material.

I now turn to the Psychiatric Clinic in Baltimore which is known as The Medical Service of the Supreme Bench of Baltimore. The clinic is manned by Dr. Manfred Guttmacher and a single assistant, who is a lawyer. This comprises the entire service. The judge, prosecutor, or defense attorney may call upon the clinic for the examination of any accused who is claimed to be abnormal. The point Dr. Guttmacher stresses is the value of the absolute neutrality of the clinic. He told me that upon more than

*Mass. Gen. Statutes—1931—Chapter 215.

one occasion he has been called as a defense witness, while the State was compelled to use experts outside the clinic to contest his findings. The knowledge of everyone concerned that the report rendered by the clinic is absolutely impartial has meant that in the great percentage of cases where the question of insanity was raised, there have been no "battles of experts". This is but another example of the coöperation which exists between the clinic and the bar. The only statutory provision that I can find relating to this clinic, is a section authorizing the judges to appoint a qualified physician to make medical examinations and to render medical service and advice in connection with prosecutions and trials in the Criminal Courts of Baltimore City.

Dr. Winfred Overholser, Assistant Commissioner of the Department of Mental Diseases of the Commonwealth of Massachusetts, explained thoroughly the operation of the Briggs Law in Massachusetts in a paper which he read before this Section in 1930*. The Briggs Law placed an already existing State Department of Mental Diseases at the service of the courts. I talked with Dr. Overholser recently. He told me that the facilities of the department were being used in steadily increasing measure by the Courts of the Commonwealth. With the enactment of perfecting amendments, the number of cases has grown from an annual average of 84 cases examined in 1926 to 743 examinations in 1931. Dr. Overholser further reports concerning the attitude of the lawyer toward the clinic as follows: "As a practical matter, Counsel for the defense have coöperated fully in allowing their clients to be examined. The Defendant is not deprived of his right to call in other experts and could not constitutionally be so deprived. The fact, however, that the examination is a fair and impartial one has appealed to defense Counsel to such an extent that 'battles of experts' are no longer witnessed in the Courts of Massachusetts, at least in Criminal Trials where the issue of sanity is involved." One advantage of the Massachusetts system is that the routine examination comes before trial so that in instances where mental disease is found, direct commitment can be made to hospitals for the insane and institutions for mental defectives, at a great saving of trial cost to the state. In Massachusetts and other jurisdictions the amounts paid to commissions composed of high-priced alienists have been reduced by two-thirds, through competent and reliable court psychiatrists.

So we find as we go along that the vital rôle of the psychiatrist is not that of expert witness where he first became known to the legal system. He is rapidly finding his real place in criminal procedure as a court consultant, whom all branches of the court find of great value. Time does not permit an account of the remaining adult clinics.

The psychiatrist takes the position that the offender is an individual with his own peculiar make-up and history, and that society will profit by treating him in that light. Does not the judge who reaches out for information through examinations and clinics have the same idea in mind?

Wherever clinics have been established, they have with the assistance of bench and bar changed the criminal procedure. It must follow that with increasing knowledge gained from experience and with the growing number of trained psychiatrists and clinics, the Criminal Adult Court will in time become a clearing house for the antisocial individual in the community.

*Code of Public Laws of Maryland, 1915. Sec. 381 A.
*American Bar Assn. Reports, 1930. Vol. 55, Page 594.

EXTRACTS FROM THE FEBRUARY *BULLETIN OF THE METROPOLITAN LIFE INSURANCE COMPANY*

(Continued from Page 774)

ago, were the leading means of occupational injury, ranked fifth in importance in 1932.

Substantial declines were also recorded in 1932 for accidental drowning, and for occupational accidents from the use of electricity, and on street railways.

For the ninth successive year, more money was paid on account of heart disease than for any other cause. Disbursements for this condition were responsible for more than one-seventh of all the money paid out in claims during the year. The increasing mortality rate of heart disease during the last ten years has raised the percentage of the total from 13, in 1922, to 15.2, in 1932. The three principal degenerative diseases — heart disease, chronic nephritis and cerebral hemorrhage— account, jointly, for 28 per cent of the 1932 disbursements.

The most outstanding contrast between the disbursements of 1932 with those of ten years before is that for tuberculosis. The marked decline which has taken place in the tuberculosis death-rate has been reflected, yearly, in a decreasing ratio of the sum paid out in death claims on account of this disease. Ten years ago, tuberculosis was responsible for a larger proportion of the total disbursements than was any other cause of death. Today, for every dollar paid out for this disease more than two dollars is paid for heart disease, and a dollar and a half is disbursed for cancer. The payments for tuberculosis now exceed only slightly those for chronic nephritis and for cerebral hemorrhage. Almost a million dollars less was disbursed in 1932 for tuberculosis than for influenza and pneumonia combined.

Because of the persistent rise in the cancer rate,

(Continued on Page 796)

NEW HAMPSHIRE MEDICAL SOCIETY

PRELIMINARY ANNOUNCEMENT OF THE ONE HUNDRED AND FORTY-SECOND ANNUAL MEETING

All meetings will be held on Standard Time. The first meeting of the House of Delegates will be held Monday evening, May 15, 7:30 o'clock, at the Carpenter Hotel, Manchester, and all subsequent meetings at the same place: Eugene B. Eastman, speaker. Under the guidance of the President, Harry O. Chesley of Dover, The Scientific Sessions will open promptly at 10 o'clock (A.M.), Tuesday, May 16, and continue with morning and afternoon sessions, Tuesday and Wednesday. The afternoon sessions will open at 2 o'clock. Tuesday evening there will be talking movies, in the Assembly Room, of some very interesting surgical subjects under the direction of Dr. P. E. Truesdale of Fall River, Mass.

The banquet will be held Wednesday evening with Louis W. Flanders of Dover, Anniversary Chairman. Dr. Edward H. Cary, Dallas, Texas, president of the American Medical Association, will deliver an address Wednesday and is listed as one of the speakers at the banquet.

Wednesday afternoon will be devoted to a symposium on Diseases of the Biliary Tract with Drs. A. T. Bazin, Montreal, Reginald Fitz, Boston, and George W. Holmes, Boston, presenting the surgical, medical and roentgenologic specialties of the subject. Dr. Frank H. Lahey, Boston, will open the general discussion.

The usual number of papers with discussions will make up the programs of both sessions Tuesday and Wednesday morning.

Gold medals will be presented to two members with fifty years' membership in the Society and the greetings and congratulations of the Society will be given to those who have been in practice for fifty years.

The usual exhibition of surgical instruments, x-ray apparatus, drug specialties, books, etc., will be held in the hotel lobby.

All arrangements for the meetings and exhibits are under the management of the Manchester Medical Society.

All indications point to the usual large attendance and the Committee on Scientific Program offers some interesting subjects for papers and discussions.

The Woman's Auxiliary will hold its annual meeting during our sessions and its members and the other visiting women will receive kind attentions from the Committee on Entertainment of Visiting Women.

The detailed program will be printed in our May number of the *Journal* and will be mailed to all of the members thirty days before this meeting.

HARRY D. CHESLEY, *President*,
DENNIS E. SULLIVAN, *Secretary-Treasurer*,
EUGENE B. EASTMAN,
Speaker of the House of Delegates.

WITHDRAWAL

Dr. Arthur C. Liston, Bellows Falls, Vermont, has withdrawn.

RESIGNATION

Dr. A. B. Woodman, Springfield, Vermont, has resigned.

GRAFTON COUNTY MEDICAL SOCIETY

Officers for 1932 and 1933:

President: John P. Bowler, Hanover.

Vice President: F. P. Dwinell, Bradford, Vermont.

Secretary-Treasurer: Leslie K. Sycamore, Hanover.

Delegates: Kenneth Churchill, Lebanon; Leslie K. Sycamore, Hanover.

SULLIVAN COUNTY MEDICAL SOCIETY

Officers for 1932 and 1933:

President: Charles E. Buchanan, Claremont.

Vice President: Burton D. Thorpe, Newport.

Secretary-Treasurer: Henry C. Sanders, Jr., Claremont.

Delegates: Henry C. Sanders, Jr., Claremont; Everett J. Stone, Newport.

OFFICERS OF CHESHIRE COUNTY MEDICAL SOCIETY

President: Edward A. Tracy, Keene.

Vice President: Walter H. Lacey, Keene.

Secretary-Treasurer: John J. Brosnahan, Keene.

Delegates to State Society: Frank Dinsmoor, Keene.

ARTHUR W. HOPKINS, West Swanzey.

THE NEW HAMPSHIRE SURGICAL CLUB

The New Hampshire Surgical Club will hold its regular meeting at the Margaret Pillsbury Hospital, Concord, on Tuesday, April 25. Dr. Robert J. Graves of Concord is president and Dr. E. M. Miller of Woodsville is secretary of the club. Programs will be mailed soon.

MEDICAL PROGRESS

PROGRESS IN THE STUDY OF CARDIOVASCULAR DISEASE IN 1931

BY SYLVESTER MC GINN, M.D.,* AND HOWARD B. SPRAGUE, M.D.*

(Continued from Page 754, issue of April 6)

X. Peripheral Vascular Disease

Sir Thomas Lewis and his associates have been making extensive investigations on the physiology and pathology of the peripheral vascular system. In one study, after a brief historical introduction, they explain the mechanism of pain occurring upon exercise in limbs with deficient blood supply. The condition can be reproduced in normal individuals by application of a pressure cuff and then exercising the limb. Release of the pressure is followed by an immediate blushing indicating that no definite spasm persists. The pain is continuous, proportional to the amount of exercise and is followed promptly by recovery when the obstruction to circulation is removed. Changes going on within the muscle, such as the production of metabolites (called Factor P) initiate the pain rather than oxygen lack. Sustained muscle contraction does not produce pain because of ischemia.

In another paper, these same workers state that an arm may fail to function due to paralysis of its nerves some time after circulation to the limb has been arrested. The nerve is itself damaged, the process extending centripetally, for experimental evidence has shown that the nerves are increasingly more sensitive to ischemia as one proceeds from the nerve endings to the central nervous system. Various nerves show evidence of the paralysis before others; for instance, the appreciation of pain, heat, and cold persists longer than does the tactile sense and in the motor system the extensors are paralyzed before the flexors. Subjective tingling appearing after pressure occluding the blood supply to a limb has been released, is probably due to a state of recovery of the nerve trunk fibers and is referred to the periphery. It may be a part played by the tactile fibers being referred to the peripheral territories of the fibers that are most affected by the circulatory arrest. It is suggested that it would be proper to consider some peripheral nerve disorder when cases with numbness, tingling, or distal muscle paralyses are encountered.

To estimate the degree of vasodilatation in the extremities clinically and to eliminate direct temperature effects on the limbs, *Lewis and Pickering* devised a cabinet to give bodily heat but to leave the extremities in the cooler atmosphere of the room. Thus the effect could come only through the central nervous system. Observations as to the temperature and brightening color of the tips of the extremities formed an index as to the capacity of the arteries to dilate. Where spasm was present the response was rapid and rose to a high level but in the case of structural disease it was slow and not pronounced.

Lewis noted that in exposure to out-of-doors, the fingers cool more than any other of the exposed parts and in the face the order is ear, nose and cheek. There appears to be some relation between skin temperature and the usual depth of skin color, those that are the reddest becoming the coldest, as for instance the tips of the ears and nose. The fingers react to exposure with vasodilation which raises the temperature but this may fail if the body generally is chilly.

The records of 24 cases having clinical evidence of scleroderma and coexisting digital changes of the Raynaud's syndrome were presented in summary by *Lewis and Landis*. The combination seemed too frequent to be purely chance. The arterioles of the affected skin and vessels supplying them had undergone structural changes, namely, intimal thickening with diminution of the vessel lumen. It is stated again that the circulatory manifestations of Raynaud's disease are due to a local disorder of the vessels. In the milder forms, there is a tendency to spasm but in the severer forms spasm is reinforced by local structural changes.

Simpson has discussed the values of various instrumental methods used in the diagnosis of peripheral vascular disease. He believes oscillometry of value in determining the presence and amplitude of pulsation. He has considered the mechanism of vaccine fever and has found the vasomotor index the best means of expressing it. Oscillometry of the foot during vaccine fever may have some prognostic value. After sympathetic ganglionectomy, surface temperature, which is the best therapeutic index, is found to be high both day and night for an indefinite period of years.

XI. Pharmacology

Frey discusses the circulatory hormone of the pancreas with especial reference to its therapeutic use. The hormone originates in the pancreas, is found in the urine and in blood, can be purified for intravenous use, and has as its chief practical effect the ability to produce dilatation of the smaller blood vessels. It is used to reduce hypertension and has been found to increase the blood pressure in hypotension. It has been found useful in conditions aided by vasodi-

*McGinn—Dalton Fellow, Cardiac Clinics and Laboratory, Massachusetts General Hospital. Sprague—Assistant Physician, Massachusetts General Hospital. For records and addresses of authors see "This Week's Issue," page 804.

latation such as angina pectoris, thromboangiitis obliterans, incipient arteriosclerotic changes, Raynaud's disease, arthritis, and scleroderma.

The addition of the administration of carbohydrates and insulin to the therapy of the cardiac patient has received support from two sources. *Rimbaud* and his coworkers gave 21 patients five units of insulin subcutaneously and injected 100 cc. and 200 cc. of 50 per cent sugar solution 15 to 30 minutes later. They found it a helpful adjunct in cases of the ventricular insufficiencies with a systole or hyposystole but having little influence in hyperthyroid or acute infectious, cardiac conditions, or in the arhythmias or arterial hypertension. *Macchioro* noted subjective improvement in patients receiving this type of therapy and on this account advised its use.

Middleton and Oatway emphasize the importance of avoiding hypoglycemic reactions in the presence of myocardial insufficiency. Illustrating this point, *Modern*, independently reports a patient having precordial distress when she received overdosages of insulin.

Hildebrandt and Mügge direct attention to the fact that epinephrine and ephedrine are not alike and that animal experiments show that the cardiac action is not at all regular. Some favorable influences are seen but those of opposite effect likewise take place so that they advise extreme care in the use of ephedrine in collapse. From animal and clinical observations, *Johnson and Gilbert* conclude that undesirable and even dangerous effects come from the use of ephedrine and digitalis together in cardiac conditions. *Ayres and Anderson* call attention to two cases of dermatitis medicamentosa resulting from the administration of ephedrine.

Burgess observed no consistent blood pressure changes resulting from giving therapeutic doses of glyceryl trinitrate or amyl nitrite to normal persons or to those with arterial hypertension. A transient and quick fall in blood pressure does occur after giving amyl nitrite but the change is too rapid to be a test for arteriolar relaxability. Pain relief obtained by giving amyl nitrite to patients with ambulatory angina pectoris is entirely independent of the blood pressure changes.

Schwartz and Levy gave doses of standardized digitalis until the point of toxicity was reached in 67 children between 4 and 5 years old having congestive failure and afebrile rheumatic heart disease. In only one case did they see within a week's time any evidence of weight loss or striking improvement in their symptoms. *Schwartz* has reported several cases of paroxysmal auricular fibrillation with slowing of the heart rate four to five hours after a large single dose of digitalis had been given. A relatively normal sinus rate could be maintained with daily doses of digitalis but if it were discontinued for any length of time auricular premature beats would appear, soon followed by an attack of auricular fibrillation.

Birkhaug has observed that, using guinea pigs as indicators, a saturated solution of sodium salicylate can neutralize the diphtheria and tetanus toxins in vitro without destroying their antitoxic properties. In vivo, however, it fails to save the animal from death when given a lethal dose of toxin neutralized by sodium salicylate. No neutralizing effects are seen when employed with the toxins of the hemolytic or non-hemolytic streptococci. The antibactericidal property of sodium salicylate is about one-tenth that of phenol. Judging by its action in vitro, it is believed to weaken the microörganisms in vivo and so diminish their toxin production.

Sprague and Graybiel report 60 cases in which mersalyl (Salyrgan) was successfully used as a diuretic in 80 per cent. Toxic effects were rare and consisted of mild renal, gastrointestinal or skin irritations.

Rinehart and Anderson report that lethal or sublethal doses of emetine hydrochloride in rabbits caused severe heart damage. This consisted of interstitial edema and cellular infiltration and where death was prolonged to 3 or 4 days, areas of necrosis were found in the myocardium.

XII. Treatment

A. Medical

White, in two papers, has given a comprehensive review of the modern therapy, in one the significance and treatment of the cardinal cardiac symptoms, and in the other, the treatment of mild, moderate, and severe congestive failure.

Zwilichowskaja has found that when small amounts of gastric juice were added to digitalis the contractility of the isolated frog's heart was checked. The degree of inhibition of the contractility was in direct proportion to the quantity of gastric juice added to the digitalis and also on the length of time the two agents had been together. She also noted that digitalis given orally increases the secretion of gastric juices. She believes that digitalis should be administered rectally in cases where there is obstruction to the portal system or where hyperacidity is present.

Sutton and Wyckoff report 25 cases of digitalization in 22 patients with heart failure and active rheumatic heart disease. Twelve of this group are dead, one has not been heard from, four are in the hospital under digitalis for 3-6 months, and five are reported in good condition. They conclude that digitalis is effective in the presence of active infection of the heart and is of value in the treatment of children with heart failure. It is administered in doses comparable to those required by adults (0.15 units per pound of body weight).

Boas believes that the ventricular rate in patients with auricular fibrillation is dependent on the balance existing between the vagus and accelerator nerves. It is the regulation of this balance that should determine the dosage of digitalis rather than the weight of the patient, cases having greater accelerator activity requiring more digitalis. The cases of auricular fibrillation most apt to show an exaggerated accelerator activity are in childhood, fever, exophthalmic goitre, and with severe cardiac insufficiency.

Maynard recommends the use of quinidine sulphate in properly selected cases of chronic auricular fibrillation, paroxysmal auricular fibrillation, paroxysmal ventricular tachycardia, and in cases of frequent premature beats where the usual methods of reassurance and sedatives are insufficient. *Padilla and Cossio* have found the intravenous injection of quinidine sulphate beneficial in prolonged cases of auricular paroxysmal tachycardia and paroxysmal auricular flutter. Their method of administration is to give an intravenous injection of 0.005 Gm. of quinidine sulphate in 10 cc. of sterile physiologic sodium chloride. If this dose is insufficient after a certain time it is increased to 0.15 Gm. for every 10 kg. of body weight; thereafter the quinidine is given orally.

The sulphocyanate salts have received much consideration and criticism in an earnest effort of investigators to evaluate them. *Healy* reports that experimental and clinical data indicate that the drug is cumulative and that it acts on the suprarenals. Therapeutic doses of the sulphocyanates have produced the syndrome of hypoadrenia clinically and experimentally. He believes that doses of the drug large enough to reduce the blood pressure appreciably are toxic and may destroy life.

Ayman states that there is no evidence as to the clinical value of the thiocyanates in essential hypertension and that they are contraindicated in clinically demonstrable arteriolar sclerosis. *Egloff* and his associates found only two out of 25 patients with hypertension that reacted favorably to sodium thiocyanate therapy.

The sulphocyanate salts were found to be effective in lowering the blood pressure in about one-third of the hypertensive cases in which *Goldring and Chasis* used it. They administered no more than gr. V daily and no longer than for 80 days and stopped at the first evidence of toxicity, the incidence of which was 17 per cent with 2 deaths.

Davis emphasizes the point that hypertension is merely a symptom and it is the underlying disease that should receive consideration. He compares our present attack on hypertension to the earlier use of antipyretics to lower fevers without respecting the cause of the fever. He has found that calcium lactate, 8 Gm., before meals plus a low salt and low protein diet gives considerable subjective improvement but changes the hypertension very little.

Raab found that diathermy of the brain stem did not alter the blood pressure of normal persons but it was reduced in cases of essential and arteriosclerotic hypertension a short time after passage of the current. These findings lend further support to the part played by the nervous system in the development of hypertension.

Herrmann and Jamison have analyzed the treatment of 100 patients with syphilitic aortic regurgitation and congestive heart failure. The older the patient at the time of decompensation the more serious is the prognosis but the treatment of the myocardial insufficiency is of greatest importance to make him comfortable, although life may not be greatly prolonged. They use rest and digitalization and purine diuretics. Mercury, bismuth, and the iodides are given for two or three months before arsphenamine is used.

The use of a streptococcus vaccine in the treatment of rheumatic fever has been reported from several sources. *Clawson* has stated that streptococcic rheumatoid lesions in animals made hypersensitive to streptococci can be prevented by intravenous vaccination. Since patients having acute rheumatic fever are hypersensitive to streptococci it is suggested that such intravenous vaccination may be of definite benefit. *Swift* and his associates have found it sufficiently promising to continue their investigations administering it especially to two groups of patients, those having a continued low grade infection and those free from symptoms but in whom relapses may be expected.

Wilson and Swift report their observations on a group of 172 children of the susceptible ages followed for a period of four years for recurrence of rheumatic manifestations. About one-half of the group were used as controls and the others were given intravenous vaccination with hemolytic streptococcal vaccine. The incidence of recurrence was comparable in the two groups over a period of two years before vaccination was instituted. In the two years subsequent to vaccination, 45 per cent of the treated children were free from recurrence as compared with 18 per cent of the control children.

Sutton has reported 24 cases of chorea treated with intravenous injections of typhoid paratyphoid vaccine to produce a febrile reaction. She states that there has been a prompt cessation of symptoms and the course of the disease has been greatly shortened.

Trace and Berkovitz report a case of purulent meningococcic pericarditis complicating epidemic cerebrospinal meningitis. The patient recovered after repeated aspirations and intrapericardial injections of antimeningococcus serum.

Wolffe and Bellett have reported three cases of simple paroxysmal tachycardia that were immediately terminated by the intravenous use of calcium gluconate (20 cc.).

Parade and Voit have reported a case of Adams-Stokes syndrome successfully treated at first by subcutaneous injections of epinephrine. Oral administration of ephedrine was given and the attacks ceased almost completely but recurred when the patient failed to take his daily dose of ephedrine.

Barach has reported the results of treating 20 patients with heart disease in an oxygen tent and *Barach and Richards* reported eight cases in an oxygen chamber, 45 to 50 per cent oxygen being supplied in both cases. In congestive failure, dyspnea and cyanosis were relieved, the pulse was lowered, and arterial content of oxygen increased. Diuresis is generally increased sometimes to a striking degree. Coronary arteriosclerosis and coronary thrombosis were both relieved subjectively so far as pain was concerned.

Henderson has suggested the possibility of giving carbon dioxide inhalations to patients with angina pectoris. Inasmuch as only three patients having angina pectoris and two with intermittent claudication have been given carbon dioxide inhalations, the author considers this a preliminary report. These patients have had beneficial results, employing an apparatus devised to make carbon dioxide available for inhalation but without danger. It is thought that the carbon dioxide causes a relaxation of blood vessels of a working muscle thereby making more oxygen available for reaction with the waste products. After a prolonged course of treatment, it is believed that the immediate beneficial effect may result in a more lasting state of relaxation.

Cottrell and Wood saw a very severe reaction when epinephrine (1 cc. of 1:1000 solution) was given subcutaneously as a therapeutic test for angina pectoris. This has led them to believe that great caution should be used in employing either epinephrine or ephedrine as a therapeutic test for angina pectoris.

Attinger believes that morphine has a favorable influence in cardiac insufficiency and that it exerts no untoward effect on the heart. There were two conditions, however, in which he believes it is contraindicated, namely, in angina pectoris because it constricts the coronaries and when edema is present because morphine impairs diuresis.

B. SURGERY

Selkirk and Mitchell found in their study of children three years after tonsillectomy and adenoidectomy that there was a lessened incidence of colds, nasal obstruction, and sore throats while there was an increased frequency of sinus infection, headache, and growing pains. In determining the value of such a procedure, other factors such as age, sex, race, heredity, and environment must be considered.

Beck states that circulatory failure due to a pericardial scar can be completely relieved by operation. Pericardiectomy is the operation of choice to be done in a single stage within a negative chamber to prevent pneumocardiac tamponade.

Alessandri urges earlier diagnoses and prompt surgical intervention in cases of obstruction to peripheral blood flow resulting in gangrene. He describes the technique of an operation he has devised for increasing the blood supply to the upper extremities — namely, a cervicothoracic ganglionectomy.

White has summarized 35 cases in which sympathetic ganglionectomies have been done. He has found this operation indicated in cases of Raynaud's disease, either early or late scleroderma, vasomotor hyperactivity and in any cases with obstruction to the circulation that show vasodilatation and increased blood flow after an intravenous injection of typhoid vaccine.

Smithwick believes that an alcohol injection of the peripheral sensory nerves is of tremendous help in treating painful ulcerations in the presence of advanced obliterative vascular disease. It is rarely necessary now to amputate a limb because of pain.

Cowan states that oftentimes the pain is so severe in angina pectoris that the patients demand relief although it is to be realized that though there may be no cardiac pain the underlying condition remains the same. The method of procedure consists in interrupting the sensory fibres connecting the heart and the brain. These pathways may be blocked by (1) removal of the stellate and upper dorsal ganglions; (2) section or block of the rami communicantes; and (3) section or block of the posterior nerve roots. The least dangerous procedure, he believes, is alcohol injection of the rami communicantes.

Levy and Moore have made an analysis of 57 cases in the literature and 9 observed by themselves that received paravertebral injections of alcohol for the relief of cardiac pain. The available data on 49 cases indicate that there was complete relief in 51 per cent, improvement in 34 per cent, and no change or complete failure in 15 per cent. The benefit was temporary in some but prolonged in others. One case of Brown-Séquard paralysis was reported by *Molitch and Wilson* following a paravertebral alcohol injection. Recovery was rapid, so that it is believed that the needle entered the intervertebral foramen and pierced the spinal cord, but fortunately no alcohol was injected.

REFERENCES

1 Alessandri, R.: Raynaud's disease and thromboangiitic gangrene of upper extremities treated by resection of sympathetic ganglia and trunk. Am. J. Surg. 14:68, 1931.

2 Allen, F. P.: Cardiovascular impairment among one thousand Negro factory workers. J. Indust. Hyg. 13:164, 1931.

3 Alvarez, J. A., and Herrmann, G.: Unusual signs from expansive Chiari network along with signs of syphilitic aortic regurgitation. Am. J. Syph. 15:532, 1931.

4 Arnett, J. H., and Long, C. F.: Case of congenital stenosis of pulmonary valve, with late onset of cyanosis; death from carcinoma of pancreas. Am. J. M. Sc. 182:212, 1931.

5 Attinger, E.: Contraindications to morphine in circulatory therapy. Schweiz. med. Wchnschr. 61:377, 1931.

6 Ayman, D.: Early diagnosis and early treatment of arteriolar (essential) hypertension. New Eng. J. Med. 205:424 (Aug. 27) 1931.

7 Ayman, David: Potassium thiocyanate in the treatment of essential hypertension: its impracticability. J. A. M. A. 96:1852 (May 30) 1931.

8 Ayman, D.: Essential hypertension; diastolic blood pressure: its variability. Arch. Int. Med. 48:89, 1931.

9 Ayman, D., and Pratt, J. H.: Nature of symptoms associated with essential hypertension. Arch. Int. Med. 47: 675, 1931.

10 Ayres, Samuel, Jr., and Anderson, Nelson Paul: Dermatitis medicamentosa due to ephedrine. J. A. M. A. 97: 437 (Aug. 15) 1931.

11 Bacon, Charles M., Kretschmer, Herman L., and Woodruff, Lewis W.: Prostatic obstruction: electrocardiographic study of three hundred and twenty-one cases: a further report. J. A. M. A. 97:1221 (Oct. 24) 1931.

12 Bacon, C. M., Kretschmer, H. L., and Woodruff, L.: Electrocardiographic studies in prostatic obstruction; preliminary report. J. Urol. 25:335, 1931.

13 Ball, D.: Change in size of heart in severe anemia; with report of case. Am. Heart J. 6:517, 1931.

14 Barach, A. L.: Therapeutic use of oxygen in heart disease. Ann. Int. Med. 5:428, 1931.

15 Barach, A. L., and Richards, D. W.: Effects of treatment with oxygen in cardiac failure. Arch. Int. Med. 48:325, 1931.

16 Baudet: Acute articular rheumatism with peritoneal reaction simulating appendicitis. Bull. et mém. Soc. Nat. de chir. 57:265, 1931.

17 Beck, C. S.: Congenital deficiency of pericardium; function of pericardium. Arch. Surg. 22:282, 1931.

18 Beck, Claude S.: The surgical treatment of pericardial scar. J. A. M. A. 97:824 (Sept. 19) 1931.

19 Bedford, D. E., and Treadgold, H. A.: Size of healthy heart and its measurement. Lancet. 2:836, 1931.

20 Birkhaug, K. E.: Detoxifying and disinfecting properties of sodium salicylate; its action on diphtheria and tetanus toxins and on streptococcal "toxic" filtrates. J. Infect. Dis. 48:212, 1931.

21 Bland, E. F., Balboni, G. M., and White, P. D.: Enormous increase of heart volume with mitral stenosis: report of a case. J. A. M. A. 96:840 (Mar. 14) 1931.

22 Bland, E. F., and White, P. D.: Clinical significance of complete inversion of lead three of human electrocardiogram. Am. Heart J. 6:333, 1931.

23 Blumgart, H. L., Lawrence, J. S., and Ernstene, A. C.: Dynamics of circulation in coarctation (stenosis of isthmus) of aorta of adult type; relation to essential hypertension. Arch. Int. Med. 47:806, 1931.

24 Blumgart, H. L.: Velocity and volume of blood flow. New Eng. J. Med. 205:943 (Nov. 12) 1931.

25 Boas, E. P.: Digitalis dosage in auricular fibrillation; influence of activity of cardiac nerves on size of effective dose. Am. Heart J. 6:788, 1931.

26 Boas, E. P.: Heart rate of boys during and after exhausting exercise. J. Clin. Investigation. 10:145, 1931.

27 Boas, E. P., and Lowenburg, H.: Heart rate in progressive muscular dystrophy; studies with cardiotachometer. Arch. Int. Med. 47:376, 1931.

28 Bock, A. V.: Tests of physical fitness: physiology of muscular exercise. New Eng. J. Med. 205:944 (Nov. 12) 1931.

29 Bolton, C., and Barnard, W. G.: Pathological occurrences in liver in experimental venous stagnation. J. Path. & Bact. 34:701, 1931.

30 Borman, M. C., and Meek, W. J.: Coronary sinus rhythm; rhythm subsequent to destruction by radon of sino-auricular nodes in dogs. Arch. Int. Med. 47:957, 1931.

31 Boswell, C. H., and Palmer, H. D.: Progressive thrombosis of pulmonary artery. Arch. Int. Med. 47:799, 1931.

32 Brams, W. A., and Gaberman, P.: Effect of digitalis on T-wave of electrocardiogram; experimental study in human beings. Am. Heart J. 6:804, 1931.

33 Bramwell, C., and Ellis, R.: Some observations on circulatory mechanism in marathon runners. Quart. J. Med. 24:329, 1931.

34 Brenner, O.: Sclerosis of pulmonary artery with thrombosis. Lancet. 1:911, 1931.

35 Burgess, A. M.: Reaction to nitrites in anginal syndrome and arterial hypertension. Ann. Int. Med. 5:441, 1931.

36 Caffé, L., and Schwartz, L.: Angina pectoris and auricular fibrillation. Bull. et mém. Soc. méd. d. hop. de Bucarest. 13:137, 1931.

37 Calhoun, J. A., Cullen, G. E., Clarke, G., and Harrison, T. R.: Studies in congestive heart failure. VI. Effect of overwork and other factors on potassium content of cardiac muscle. J. Clin. Investigation. 9:393, 1930.

38 Calhoun, J. A., Cullen, G. E., and Harrison, T. R.: Congestive heart failure. VII. Effect of overwork on potassium content of skeletal muscle. J. Clin. Investigation. 9:405, 1931.

39 Calhoun, J. A., Cullen, G. E., Harrison, T. R., Wilkins, W. L., and Tims, M. M.: Studies in congestive heart failure. XIV. Orthopnea: its relation to ventilation, vital capacity, oxygen saturation and acid-base condition of arterial and jugular blood. J. Clin. Investigation. 10: 833, 1931.

40 Calhoun, J. A., and Harrison, T. R.: Studies in congestive heart failure; IX. Effect of digitalis on potassium content of cardiac muscle of dogs. J. Clin. Investigation. 10:139, 1931.

41 Campbell, S. B. B., and Turkington, S. I.: Right bundle-branch block; analysis of clinical records of fifty-six cases with typical electrocardiograms. Quart. J. Med. 24:481, 1931.

42 Cason, T. Z.: Comparative study of cardiovascular syphilis in white and colored races. Am. J. Syph. 15:527, 1931.

43 Cecil, R. L., Nicholls, E. E., and Stainsby, W. J.: Etiology of rheumatoid arthritis. Am. J. M. Sc. 181:12, 1931.

44 Cheer, S. N., and Dieuaide, F. R.: Studies on electrical systole ("q - t" interval) of heart: II. Its duration in cardiac failure. J. Clin. Investigation. 10:889, 1931.

45 Christian, H. A.: Chronic nonvalvular cardiac disease or chronic myocardial insufficiency and its therapeutic management. Ann. Int. Med. 5:95, 1931.

46 Christian, H. A.: Aortic stenosis with calcification of the cusps. J. A. M. A. 97:158 (July 18) 1931.

47 Christian, H. A.: Aortic lesions in relation to cardiac function and physical signs. New Eng. J. Med. 205:893 (Nov. 5) 1931.

48 Clawson, B. J.: Bacteriology of acute rheumatic fever with experimental basis in animals for vaccine therapy. Minnesota Med. 14:1, 1931.

49 Cobb, S.: Cerebral circulation; question of "end arteries" of brain and mechanism of infarction. Arch. Neurol. & Psychiat. 25:273, 1931.

50 Collins, D. C.: Anomalous papillary muscle attached to pulmonary valve of heart. Am. Heart J. 7:79, 1931.

51 Collis, W. R. F.: Acute rheumatism and haemolytic streptococci. Lancet. 1:1341, 1931.

52 Cooksey, W. B., and Freund, H. A.: Serial electrocardiographic studies in coronary thrombosis. Am. Heart J. 6:608, 1931.

53 Costa, Antonio: Congenital atresia of orifice of pulmonary artery, with closed interventricular septum and persistent Botallo's duct, in man, aged twenty. Clin. med. ital. 61:567, 1930.

54 Cottrell, J. E., and Wood, F. C.: Effect of epinephrin in angina pectoris: with report of a case. Am. J. M. Sc. 181:36, 1931.

55 Cowan, J. M.: Observations on angina pectoris. Brit. M. J. 1:879, 1931.

56 Craig, John D.: Femoral aneurysm during subacute bacterial endocarditis in childhood. J. A. M. A. 97:245 (July 25) 1931.

57 Cullen, G. E., Harrison, T. R., Calhoun, J. A., Wilkins, W. E., and Tims, M. M.: Studies in congestive heart failure: XIII. Relation of dyspnea of exertion to oxygen saturation and acid-base condition of blood. J. Clin. Investigation. 10:807, 1931.

58 Davis, N. S. III: Hypertension: the value of calcium salts plus diet in its management; a possible classification and an historical perspective. J. A. M. A. 97:1295 (Oct. 31) 1931.

59 Derick, C. L., and Fulton, M. N.: Skin reactions of patients and normal individuals to protein extracts of streptococci. J. Clin. Investigation. 10:121, 1931.

60 Dock, W.: Duration of electrical systole as index of myocardial efficiency. Am. Heart J. 6:690, 1931.

61 Doherty, William B., and Trubek, Max: Significant hemorrhagic retinal lesions in bacterial endocarditis (Roth's spots). J. A. M. A. 97:308 (Aug. 1) 1931.

62 Domanig, E.: Predisposition for thrombosis. Wien. klin. Wchnschr. 44:613, 1931.

63 Egloff, W. G., Hoyt, L. H., and O'Hare, J. P.: Observations on thiocyanate therapy in hypertension. J. A. M. A. 96:1941 (June 6) 1931.

64 Ellis, L. B., and Weiss, Soma: Studies in complete heart block. I. Cardiac output and peripheral circulatory mechanism. Am. J. M. Sc. 182:195, 1931.

65 Eyster, J. A. E.: Venous pressure. J. A. M. A. 97:1269 (Oct. 31) 1931.

66 Feil, H. S., Katz, L. N., Moore, R. A., and Scott, R. W.: Electrocardiographic changes in myocardial ischemia. Am. Heart J. 6:522, 1931.

67 Fine, J., and Drinker, C. K.: Effect of atelectasis on pulmonary blood volume. Arch. Surg. 22:495, 1931.

68 Fraenkel, A.: Acute digitalis action for detection of incipient cardiac weakness. Deutsche. med. Wchnschr. 57?: 1924, 1931.

69 Frey, E. K.: Circulatory hormone of pancreas; its therapeutic uses. Deutsche. Ztschr. f. Chir. 233:481, 1931.

70 Friedlander, A.: Electrocardiogram in luetic arteriosclerotic, and rheumatic heart disease. Am. Heart J. 7:15, 1931.

71 Frost, H. M.: Functional tests in the life insurance examination. New Eng. J. Med. 205:946 (Nov. 12) 1931.

72 Ginsberg, A. M.: Historical development of present conception of cardiac conditions in exophthalmic goiter. Ann. Int. Med. 5:505, 1931.
73 Gluchov, K. T.: Endocarditis: Etiology, Immunity. Vrach. Gaz. No. 13, p. 982, 1931.
74 Goldring, W., and Chasis, H.: Use of sulphocyanate in treatment of hypertension. New York State J. Med. 31:1322, 1931.
75 Grant, R. T., and Bland, E. F.: Observations on arteriovenous anastomoses in human skin and in bird's foot with special reference to reaction to cold. Heart. 15:355, 1931.
76 Grimes, E.: Effect of intrathoracic pressure on arterial tension. Arch. Int. Med. 47:876, 1931.
77 Hamburger, L. P.: Head murmurs. Am. J. M. Sc. 181:756, 1931.
78 Harris, I., and Lipkin, I. J.: Cardiac output and oxygen utilisation in some types of heart disease. Edinburgh M. J. 38:501, 1931.
79 Harrison, T. R., Turley, F. C., Jones, E., and Calhoun, J. A.: Congestive heart failure. X. Measurement of ventilation as test of cardiac function. Arch. Int. Med. 48:377, 1931.
80 Healy, J. C.: Therapeutics and toxicology of sulphocyanates. New Eng. J. Med. 205:581 (Sept. 17) 1931.
81 Hein, G. E.: Narrowing of aorta at its isthmus. U. S. Vet. Bur. M. Bull. 7:209, 1931.
82 Henderson, Y.: The volume of the circulation and its regulation by the venopressor mechanism. J. A. M. A. 97:1265 (Oct. 31) 1931.
83 Henderson, Y.: Inhalational treatment of angina pectoris and intermittent claudication. Am. Heart J. 6:548, 1931.
83 Herrick, J. B.: Coronary artery in health and disease. Am. Heart J. 6:589, 1931.
84 Herrmann, G.: Edema in patients with syphilis, with especial reference to its renal and cardiac origin. Am. J. Syph. 15:19, 1931.
85 Herrmann, G., and Jamison, C.: Treatment of cardiovascular syphilis with especial reference to aortic regurgitation with congestive heart failure. Am. J. Syph. 15:1, 1931.
86 Hildebrandt, F., and Mügge, H.: Circulatory action of ephedrine. Klin. Wchnschr. 10:291, 1931.
87 Horine, E. F., and Weiss, M. M.: Retinal changes of arteriosclerotic heart disease and essential hypertension. Arch. Ophth. 6:835, 1931.
88 Huches, T. A., and Yusuf, M.: Further observations on heart disease in the Punjab. Indian M. Gaz. 66:423, 1931.
89 Hurxthal, L. M.: Blood pressure before and after operation in hyperthyroidism. Arch. Int. Med. 47:167, 1931.
90 Johnson, Carl A., and Gilbert, N. C.: The combined use of digitalis bodies and ephedrine hydrochloride: Effect on unanesthetized dog. J. A. M. A. 96:1668 (May 16) 1931.
91 Jones, T. D.: Cyanosis and clubbing of fingers. New Eng. J. Med. 205:940 (Nov. 12) 1931.
92 Kahn, M. H.: Electrocardiogram in angina pectoris. Ann. Int. Med. 4:1499, 1931.
93 Katz, L. N., and Wallace, A. W.: Rôle of cardiac ischemia in producing r-t deviations in electrocardiogram. Am. J. M. Sc. 181:856, 1931.
94 Koroboff, D. M., and Mekler, M. I.: Cardiovascular disease in acute and chronic rheumatism in Red army. Klin. med. 9:497, 1931.
95 Lambert, A.: Theory of causation of cardiac pain. Ann. Int. Med. 5:256, 1931.
96 Larson, L. M.: Mesenteric vascular occlusion. Surg. Gynec. Obst. 53:54, 1931.
97 Levine, S. A.: Factor of bronchial dyspnea in heart disease. New Eng. J. Med. 205:941 (Nov. 12) 1931.
98 Levy, R. L.: Mild forms of coronary thrombosis. Arch. Int. Med. 47:1, 1931.
99 Levy, R. L., and Moore, R. L.: Paravertebral injections of alcohol for relief of cardiac pain: a review of experience to date and report of nine cases. Arch. Int. Med. 48:146, 1931.
100 Lewis, T.: Supplementary notes upon reactions of vessels of human skin to cold. Heart. 15:351, 1931.
101 Lewis, T.: Angina pectoris associated with high blood pressure and its relief by amyl nitrite; with note on Nothnagel's syndrome. Heart. 15:305, 1931.
102 Lewis, T., and Landis, E. M.: Further observations upon variety of Raynaud's disease; with special reference to arteriolar defects and to scleroderma. Heart. 15:329, 1931.
103 Lewis, T., Pickering, G. W., and Rothschild, P.: Observations upon muscular pain in intermittent claudication. Heart. 15:359, 1931.
104 Lewis, T., Pickering, G. W., and Rothschild, P.: Centripetal paralysis arising out of arrested bloodflow to limb, including notes on form of tingling. Heart. 16:1, 1931.
105 Lewis, T., and Pickering, G. W.: Vasodilatation in limbs in response to warming body; with evidence for sympathetic vasodilator nerves in man. Heart. 16:33, 1931.
106 Lian, C.: Angina pectoris complicating left thoracobrachial neuralgia. Rev. belge sc. méd. 3:354, 1931.
107 Lichtman, S. C.: Isolated congenital dextrocardia: report of two cases with unusual electrocardiographic findings; anatomic, clinical, roentgenologic and electrocardiographic studies of cases reported in literature. Arch. Int. Med. 48:683, 1931.
108 Lloyd, W.: Myocardium in yellow fever; myocardial function in experimental yellow fever. Am. Heart J. 6:483, 1931.
109 Lloyd, W.: Myocardium in yellow fever; myocardial lesions in experimental yellow fever. Am. Heart J. 6:504, 1931.
110 Longcope, W. T.: Variations in manifestations of rheumatic fever in relation to climate. Ann. Int. Med. 5:401, 1931.
111 Lower, W. E., and Farrell, J. I.: Aneurysm of splenic artery; report of case and review of literature. Arch. Surg. 23:182, 1931.
112 Luten, D.: Contributory factors in coronary occlusion. Am. Heart J. 7:26, 1931.
113 MacCallum, W. G.: Obliterative pulmonary arteriosclerosis. Bull. Johns Hopkins Hosp. 49:37, 1931.
114 Macchioro, G.: Clinical experiences with therapeutic action of sugar combined with insulin in states of cardiac insufficiency. Riforma med. 47:1297, 1931.
115 McEachern, D., and Rake, G.: Study of morbid anatomy of hearts from patients dying with hyperthyroidism. Bull. Johns Hopkins Hosp. 48:273, 1931.
116 McGuire, J., and Fouiger, J. H.: Value of needle electrodes in electrocardiographic diagnosis. Am. Heart J. 6:536, 1931.
117 MacKenzie, L. F., Wells, P. V., Dewis, E. G., and Yivisaker, L. S.: Interpretation of flarimeter tests. Am. J. M. Sc. 182:497, 1931.
118 Mandelstamm, M. E.: Autonomic cardiac reflexes and angina pectoris. Vrach. Gaz. 35:741, 1931.
119 Margolis, H. M., Ziellessen, F. O., and Barnes, A. R.: Calcareous aortic valvular disease. Am. Heart J. 6:349, 1931.
120 Master, A. M.: Low-voltage T waves in electrocardiogram. Am. J. M. Sc. 181:211, 1931.
121 Master, A. M., Romanoff, A., and Jaffe, H.: Electrocardiographic changes in pneumonia. Am. Heart J. 6:696, 1931.
122 Maynard, E. P. Jr.: Present status of quinidine therapy. New York State J. Med. 31:1311, 1931.
123 Means, J. H.: Dyspnea. New Eng. J. Med. 205:939 (Nov. 12) 1931.
124 Means, J. H., and Mallory, T. B.: Total occlusion of right branch of pulmonary artery by organized thrombus. Ann. Int. Med. 5:417, 1931.
125 Middleton, W. S.: Syphilitic aortitis in retrospect. Ann. Int. Med. 5:294, 1931.
126 Middleton, W. S., and Oatway, W. H. Jr.: Insulin shock and myocardium. Am. J. M. Sc. 181:39, 1931.
127 Modern, Fred S.: Chronic heart pain due to prolonged hypoglycemia. J. A. M. A. 96:357 (Jan. 31) 1931.
128 Molitch, Matthew, and Wilson, George: Brown-Séquard paralysis following a paravertebral alcohol injection for angina pectoris. J. A. M. A. 97:247 (July 25) 1931.
129 Moon, V. H., and Stewart, H. L.: Experimental rheumatic lesions in dogs and in rabbits. Arch. Path. 11:190, 1931.
130 Moore, R. L.: Volume of blood flow per minute through lungs following collapse of one lung by occlusion of its bronchus. Arch. Surg. 22:225, 1931.
131 Moritz, A. R.: Syphilitic coronary arteritis. Arch. Path. 11:44, 1931.
132 Moritz, F.: Normal size and form of heart in man. Deutsches. Arch. f. klin. Med. 171:431, 1931.
133 Morris, R. S.: "Thyroid heart" with low basal metabolic rate. Am. J. M. Sc. 181:297, 1931.
134 Morse, J. L.: Prognosis of acute endocarditis in childhood; analysis of one hundred cases. Am. J. Dis. Child. 42:725, 1931.
135 Munck, W.: Sudden death from heart failure in adults. Ugesk. f. Laeger. 93:787, 1931.
136 Musser, J. H., and Barton, J. C.: Familial tendency of coronary disease. Am. Heart J. 7:45, 1931.
137 Nicholls, Edith E., and Stainsby, W. J.: Streptococcal agglutinins in rheumatoid arthritis: preliminary report. J. A. M. A. 97:1146 (Oct. 17) 1931.
138 Padilla, T., and Cossio, P. Jr.: Arrhythmia: intravenous quinidine therapy. Arch. d. mal. du coeur. 24:401, 1931.
139 Paul, C. P., and Platt, R.: Pulmonary arterio-sclerosis. Brit. M. J. 1:698, 1931.
140 Palmer, R. S.: Referred pain of gastro-intestinal origin simulating angina pectoris. New Eng. J. Med. 204:1351 (June 25) 1931.
141 Papp, C.: Fallot's tetrad: roentgen diagnosis. Arch. d. mal. du coeur. 24:249, 1931.
142 Parade, G. W., and Voit, K.: Pathology and therapy of Adams-Stokes disease. Deutsche. med. Wchnschr. 57:629, 1931.
143 Parkinson, J., and Cookson, H.: Size and shape of heart in goitre. Quart. J. Med. 24:499, 1931.
144 Parkinson, J., and Bedford, D. E.: Pulmonary artery impression on oesophagus. Lancet. 2:337, 1931.
145 Patek, A., and Weiss, Soma: Tonus of autonomic nervous system in arterial hypertension. New Eng. J. Med. 205:330 (Aug. 13) 1931.
146 Patten, B. M.: Closure of foramen ovale. Am. J. Anat. 48:19, 1931.
147 Paul, J. R.: Age susceptibility to familial infection in rheumatic fever. J. Clin. Investigation. 10:53, 1931.
148 Paul, J. R., and Salinger, R.: Spread of rheumatic fever through families. J. Clin. Investigation. 10:33, 1931.
149 Pepper, O. H. P.: Malignant hypertension simulating brain tumor. Penn. M. J. 35:76, 1931.
150 Perry, C. B.: Congenital anomalies of heart in elementary school children. Arch. Dis. Childhood. 6:265, 1931.

151 Perry, C. B.: Electrocardiogram of normal school children. Arch. Dis. Childhood. 6:259, 1931.
152 Pisani, G.: Bone transmission of sounds and murmurs in diseases of heart and its diagnostic importance. Diagnosi. 11:307, 1931.
153 Pollack, H.: Electrocardiographic studies on chick embryo hearts; technic for recording electrical changes in isolated chick embryo hearts. J. Lab. & Clin. Med. 16:1080, 1931.
154 Powers, J. H., Pilcher, C., and Bowie, M. A.: Some observations on circulation in experimental mitral stenosis. Am. J. Physiol. 97:405, 1931.
155 Proger, S. H.: Electrocardiogram in obesity. Arch. Int. Med. 47:64, 1931.
156 Raab, W.: Diathermy of brain stem in arterial hypertension. Ztschr. f. klin. Med. 118:181, 1931.
157 Raab, W.: Central vasomotor irritability; contribution to problem of essential hypertension. Arch. Int. Med. 47:727, 1931.
158 Rabinowitz, M. A., Shookhoff, C., and Douglas, A. H.: Red cell sedimentation time in coronary occlusion. Am. Heart J. 7:52, 1931.
159 Rake, G., and McEachern, D.: Experimental hyperthyroidism and its effect on myocardium in guinea pigs and rabbits. J. Exper. Med. 54:23, 1931.
160 Richter, Ina M.: Incidence and variety of heart disease in school children of San Francisco: two years' survey. J. A. M. A. 97:1060 (Oct. 10) 1931.
161 Riesman, David: High blood pressure and longevity. J. A. M. A. 96:1105 (Apr. 4) 1931.
162 Rimbaud, L., Balmes, A., and Martin, G. A.: Carbohydrate-insulin in cardiology. Presse méd. 39:1647, 1931.
163 Rinehart, J. F., and Anderson, H. H.: Effect of emetine on cardiac muscle. Arch. Path. 11:546, 1931.
164 Berts, S. R.: Nervous and mental influences in angina pectoris. Am. Heart J. 7:21, 1931.
165 Root, H. F., and Graybiel, Ashton: Angina pectoris and diabetes mellitus. J. A. M. A. 96:925 (March 21) 1931.
166 Rösler, H., and White, P. D.: Unusual variations of roentgen shadow of elongated thoracic aorta. Am. Heart J. 6:768 (Aug.) 1931.
167 Rukstinat, George: Experimental air embolism of the coronary arteries. J. A. M. A. 96:26 (Jan. 3) 1931.
168 Sarasola, R. Diaz: Postoperative embolism and thrombosis: etiology and pathogenesis. Arch. de cardio. y hematol. 12:46, 1931.
169 Schwab, E. H., and Sanders, C. B.: Aortic aneurysm rupturing into conus arteriosus of right ventricle. Am. J. M. Sc. 182:208, 1931.
170 Schwartz, S. P.: Effects of digitalis on premature auricular contractions associated with attacks of paroxysmal auricular fibrillation. Use of drug in treatment and prevention of certain forms of these arrhythmias. Am. Heart J. 6:458 (Apr.) 1931.
171 Schwartz, S. P., and Bloon, S.: Clinical signs of occluding thrombi of left auricle. Am. Heart J. 7:84, 1931.
172 Schwartz, S. P., and Levy, J.: Digitalis studies on children with heart disease; effects of digitalis on edema of children with rheumatic fever and chronic valvular heart disease in presence of sinus rhythm. Am. J. Dis. Child. 42:1349, 1931.
173 Scott, L. C.: Potassium content of hearts of persons dying from edematous and non-edematous conditions. Arch. Int. Med. 47:116, 1931.
174 Seham, M., Shapiro, M. J., and Hilbert, E. H.: Early diagnosis of rheumatic heart disease in children. Am. J. Dis. Child. 42:503, 1931.
175 Selkirk, T. K., and Mitchell, A. G.: Evaluation of results of tonsillectomy and adenoidotomy. Am. J. Dis. Child. 42:9, 1931.
176 Seng, M. I.: Study of blood pressure in prostatism, including cardiovascular changes. J. Urol. 25:313, 1931.
177 Sheldon, W.: On acute rheumatism following tonsillitis. Lancet. 1:1337, 1931.
178 Shookhoff, C., and Douglas, A. H.: Case of acute coronary occlusion with roentgenographic evidence of early development of aneurysm of left ventricle. Am. Heart J. 7:95, 1931.
179 Shookhoff, C., and Taran, L. M.: Electrocardiographic studies in infectious diseases; scarlet fever. Am. J. Dis. Child. 42:554, 1931.
180 Shookhoff, C., and Taran, L. M.: Electrocardiographic studies in infectious diseases; preliminary report. Am. Heart J. 6:541, 1931.
181 Shookhoff, C., and Taran, L. M.: Electrocardiographic studies in infectious diseases; normal children. Am. J. Dis. Child. 42:342, 1931.
182 Siegel, M. L., and Feil, H.: Electrocardiographic studies during attacks of angina pectoris and of other paroxysmal pain. J. Clin. Investigation. 10:795, 1931.
183 Sigler, L. H.: Acute coronary occlusion; clinical and electrocardiographic study of twenty cases. Ann. Int. Med. 4:969, 1931.
184 Simpson, S. L.: Instrumental methods in study of peripheral vascular disease. Am. Heart J. 6:309, 1931.
185 Slater, S. R.: Involvement of coronary arteries in acute rheumatic fever. Am. J. M. Sc. 181:203, 1931.
186 Smith, C.: Circulation in arteriovenous aneurysm: before and after operation. Arch. Int. Med. 48:187, 1931.
187 Smithwick, R. H.: Treatment of peripheral vascular lesions. New Eng. J. Med. 204:845 (Apr. 23) 1931.
188 Sprague, H. B., Bland, E. F., and White, P. D.: Congenital idiopathic hypertrophy of heart; case with unusual family history. Am. J. Dis. Child. 41:877, 1931.
189 Sprague, H. B., and Graybiel, A.: Salyrgan as diuretic. Report of sixty cases. New Eng. J. Med. 204:154 (Jan. 22) 1931.
190 Ssalischtscheff, A. S., and Tschernogoroff, J. A.: Changes in electrocardiogram and in sphygmogram of human beings under influence of tobacco smoke. Ztschr. f. d. ges. exper. Med. 78:193, 1931.
191 Stella, G.: Part played by the Thebesian vessels in blood supply to heart. J. Physiol. 73:36, 1931.
192 Steuer, L., and Feil, H. S.: Significance of splintering of terminal portion of QRS deflection of electrocardiogram. Am. Heart J. 6:472, 1931.
193 Stewart, H. J., and Moore, N. S.: Variations of specific gravity of plasma of blood and means available for altering it. J. Clin. Investigation. 9:423, 1930.
194 Stewart, S. G.: Problems of cardiac disease associated with urinary retention. Am. J. M. Sc. 181:362, 1931.
195 Sutton, Don C.: Cardiac pain. J. A. M. A. 97:1369 (Nov. 7) 1931.
196 Sutton, Lucy P.: Treatment of chorea by induction of fever; preliminary report. J. A. M. A. 97:299 (Aug. 1) 1931.
197 Sutton, Lucy P., and Wyckoff, J.: Digitalis; its value in treatment of children with rheumatic heart disease. Am. J. Dis. Child. 41:801, 1931.
198 Swan, C. S., and Mintz, E. R.: Review of prostatectomies for benign prostatic hypertrophy at Massachusetts General Hospital in years 1926-1930, inclusive. J. Urol. 26:67, 1931.
199 Swift, H. F.: Factors favoring onset and continuation of rheumatic fever. Am. Heart J. 6:625, 1931.
200 Swift, H. F., Hitchcock, C. H., Derick, C. L., and McEwen, C.: Intravenous vaccination with streptococci in rheumatic fever. Am. J. M. Sc. 181:1, 1931.
201 Taussig, H. B.: On boundaries of sino-auricular node and atrio-ventricular node in human heart. Bull. Johns Hopkins Hosp. 48:162, 1931.
202 Thayer, W. S.: Observations on rheumatic pancarditis and infective endocarditis. Ann. Int. Med. 5:247, 1931.
203 Thomas, G. A., Exley, E. W., and O'Brien, W. A.: Causes of death following treatment for relief of prostatic obstruction. J. Urol. 25:343, 1931.
204 Trace, Isadore M., and Berkovitz, Charles: Meningococcic purulent pericarditis complicating epidemic cerebrospinal meningitis: recovery after treatment with intrapericardial injections of antimeningococcus serum. J. A. M. A. 97:246 (July 25) 1931.
205 Trendelenburg, F.: Berlin letter (The amplification of heart sounds) in J. A. M. A. 97:1977, 1931.
206 Tuohy, E. L., and Eckman, P. F.: Aortic stenosis with calcareous nodules in aortic valves. Minnesota Med. 14:289, 1931.
207 Turner, K. B.: Mechanism of death of human heart as recorded in electrocardiogram. Am. Heart J. 6:743, 1931.
208 Tuthill, J. R.: Hypertension in relation to blood vessels of medulla oblongata. Arch. Path. 11:760, 1931.
209 Vance, B. M.: Significance of fat embolism. Arch. Surg. 23:426, 1931.
210 Vanden Berg, H. J.: Cardiac overaction; most constant and most dependable sign in thyroid toxicity. Ann. Int. Med. 4:1406, 1931.
211 Vaquez, H., Gomez, D. M., and Lajole, R. J.: Mean hypertension during exertion: cardiac function. Presse méd. 39:1533 (Oct. 21) 1931.
212 de Vecchi, R.: Endocarditic process in childhood. Arch. Path. 12:49, 1931.
213 von Kiss, Paul: Significance of electrocardiography for prognosis of diphtheria. Arch. f. Kinderh. 94:97 (Sept. 11) 1931.
214 Waggoner, R. W.: Sydenham's chorea. Am. J. M. Sc. 182:467, 1931.
215 Wahl, H. R., and Gard, R. L.: Aneurism of pulmonary artery. Surg. Gynec. Obst. 52:1139, 1931.
216 Weinstein, A. A., and Weiss, Soma: Significance of potassium-calcium ratio and of inorganic phosphorus and cholesterol of blood serum in arterial hypertension. Arch. Int. Med. 48:478, 1931.
217 Weiss, M. M.: Electrocardiogram in children with chronic rheumatic heart disease and heart failure. Am. J. Dis. Child. 42:1339, 1931.
218 Weiss, Soma: Circulatory adjustments in heart disease: concept of circulatory failure. Ann. Int. Med. 5:100, 1931.
219 West, G. L.: Sudden death in case of asymptomatic subacute bacterial endocarditis. New Eng. J. Med. 205:675 (Oct. 1) 1931.
220 White, J. C.: Experiences with sympathetic ganglionectomy in peripheral circulatory disease. New Eng. J. Med. 204:852 (Apr. 23) 1931.
221 White, P. D.: Treatment of congestive heart failure. Maine M. J. 22:182, 1931.
222 White, P. D.: Significance and treatment of cardiac symptoms. New Eng. J. Med. 205:907 (Nov. 5) 1931.
223 White, P. D., and Bland, E. F.: Further report on prognosis of angina pectoris and coronary thrombosis. Study of five hundred cases of former condition and of two hundred cases of latter. Am. Heart J. 7:1, 1931.
224 White, P. D., and Sprague, H. B.: Electrocardiography of 10,000 patients at the Massachusetts General Hospital from 1914 to 1931. Kasan M. J. (Russian). 27:381, 1931.

225 Wiggers, Carl J.: Physiologic meaning of common clinical signs and symptoms in cardiovascular disease. J. A. M. A. 96:603 (Feb. 21) 1931.

226 Wiggers, Carl J.: The magnitude of regurgitation with aortic leaks of different sizes. J. A. M. A. 97:1359 (Nov. 7) 1931.

227 Willius, F. A.: Heart in old age; study of 700 patients seventy-five years of age and older. Am. J. M. Sc. 182:1, 1931.

228 Willius, F. A.: Occurrence and significance of electrocardiograms displaying large q-waves in lead III. Am. Heart J. 6:723, 1931.

229 Wilson, F. N., MacLeod, A. G., and Barker, P. S.: Interpretation of initial deflections of ventricular complex of electrocardiogram. Am. Heart J. 6:637, 1931.

230 Wilson, May G., and Swift, H. F.: Intravenous vaccination with hemolytic streptococci; its influence on incidence of recurrence of rheumatic fever in children. Am. J. Dis. Child. 42:42, 1931.

231 Winternitz, M., Deutsch, J., and Brüll, Z.: Practical method for determination of circulation time by means of sodium dehydrocholate. Med. Klin. 27:986, 1931.

232 Wolffe, J. B., and Bellett, S.: Cessation of attacks of auricular paroxysmal tachycardia by use of calcium; preliminary report. Ann. Int. Med. 4:795, 1931.

233 Wood, E. A.: Dissecting aneurysm of aorta. Lancet. 1: 402, 1931.

234 Wood, F. C., Wolferth, C. C., and Livezey, M. M.: Angina pectoris; clinical and electrocardiographic phenomena of attack and their comparison with effects of experimental temporary coronary occlusion. Arch. Int. Med. 47:339, 1931.

235 Wood, J. E. Jr.: Significance of blood pressure changes in hypertension. Virginia M. Monthly. 58:143, 1931.

236 Yater, W. M.: Tumors of heart and pericardium: pathology, symptomatology and report of nine cases. Arch. Int. Med. 48:627, 1931.

237 Zak, E.: Rôle of liver in decompensation of heart. Wien. klin. Wchnschr. 43:1588, 1930.

238 Zwillichowskaja, E. E.: Rectal administration of cardiants. Ztschr. f. klin. Med. 117:129, 1931.

BOOKS

1 Battro, Antonio: Semiologia de la Onda T del Electrocardiograma y su Interpretacion Clinica, Buenos Aires, Sebastian de Amorrortu, 1931.

2 Bock, A. V., and Dill, D. B.: The Physiology of Muscular Exercise by the late F. A. Bainbridge (rewritten), Ed. 3, London, Longmans, Green and Co., 1931.

3 Coburn, A. F.: The Factor of Infection in the Rheumatic State, Baltimore, The Williams and Wilkins Co., 1931.

4 Nelson New Loose-Leaf Medicine, Vol. IV., pp. 175-648, New York, Thomas Nelson and Sons, 1920-1932.

5 Wenckeback, K. F.: Herz- und Kreislaufinsuffizienz, Ed. 2, Dresden, Steinkopff, 1931.

6 White, P. D.: Heart Disease, New York, The Macmillan Co., 1931.

EXTRACTS FROM THE FEBRUARY *BULLETIN OF THE METROPOLITAN LIFE INSURANCE COMPANY*

(Continued from Page 787)

the actual amounts paid out from year to year and the percentage of the total have both increased. In 1932, nearly one dollar in every nine disbursed was paid out on account of cancer.

The pneumonia deathrate has shown a very decided drop in the last ten years, with the result that the percentage of the total disbursements declined from 7.3, in 1922, to 5.7, in 1932.

The sums paid out in settlement of death claims arising from pregnancy and childbirth are substantially the same as they were ten years ago, and the percentage of the total is less than half that in evidence at that time, although the number of women policyholders has greatly increased. The education of insured women in personal hygiene, the supervision of midwifery, and the extension of nursing care, both prenatal and postnatal, have been the chief factors in the reduction of the puerperal deathrate and in the proportion of death claim disbursements for these diseases.

Two items—typhoid fever and diphtheria, simply show how negligible they have become in the death claim disbursements of the life insurance companies. In ten years, the typhoid fever mortality rate has been cut more than two-thirds; and where eighty cents out of every hundred dollars of death claim disbursements was paid on account of this disease in 1922, only twenty cents was paid in 1932. Within the same period, the growing practice of immunization of children against diphtheria has reduced the deathrate from that disease nearly 80 per cent, with the result that only one-tenth of 1 per cent of all the money paid out in death claims in 1932 was on account of diphtheria.

Suicide is becoming an item of increasing importance in the budgets of the life insurance companies. Instead of the two dollars per hundred, which were disbursed for this cause ten years ago, five dollars per hundred was paid out in 1932. It should be understood, nevertheless, that this increase for suicide is not a matter of the last two or three years. The tendency has been upward since the middle of the last decade.

SIGHT-SAVING CLASS*

The success of the "sight-saving" classes which are now part of the educational system in 119 communities throughout the United States assures the permanency of these special facilities and teaching methods for the education of children with seriously defective vision.

Although the usual yearly increase in the number of such classes has been lessened because of economic conditions, it is anticipated that many additional classes will be established as soon as the industrial situation improves.

The National Society for the Prevention of Blindness announces that, to prepare teachers and supervisors for this work, training courses will be offered during the summer of 1933 at

Western Reserve University, Cleveland, Ohio, June 19-July 28.

University College, University of Chicago, Chicago, Illinois, June 26-August 1.

Teachers College, Columbia University, New York City, July 10-August 18.

A course will probably be offered also at State Teachers College, Buffalo, New York.

Information concerning these courses may be secured from the respective universities or from the National Society for the Prevention of Blindness, 450 Seventh Avenue, New York City.

*Bulletin of the National Society for the Prevention of Blindness.

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 19151

ABDOMINAL PAIN FOR NINE MONTHS

MEDICAL DEPARTMENT

A Portuguese laborer twenty-nine years old entered complaining of abdominal pain of nine months' duration. He spoke practically no English and the friend who gave the history spoke very little. The history is therefore not reliable.

For nine months he had had severe knife-like epigastric pain (he sometimes localized it more on the right) of sudden onset, usually occurring an hour after meals and helped but not entirely relieved by food or soda. He vomited with the pain occasionally until three weeks before admission, when vomiting became the rule. The vomitus was white. His stools had been light at times but not clay colored or very dark. They had been coated with blood. The pain never radiated. He had had no jaundice or dark urine. He had lost 40 pounds since the onset. For two weeks he had been taking a diet of milk and mush with little if any relief. It was learned later that he had had similar trouble ten years and three years previously. He also said that he had vomited off and on for a long time and that he had recently vomited coffee grounds material, though on account of the language difficulty this was doubtful.

He denied venereal disease. He had had no association with lead.

Records of the Outpatient Department show a visit five days before admission to the wards, when he reported passing bright blood in his stools for a week.

Except that he was a little underweight and showed slight epigastric tenderness, the physical examination was negative.

Before operation the urine showed white blood cells at two of four examinations; otherwise the urine was not remarkable. Blood examination showed 7,150 white cells, 70 per cent polynuclears, 70 to 75 per cent hemoglobin, reds 4,170,000 to 5,520,000. Except for slight variation in shape the smear was normal. A Hinton test was negative. The stools were yellow, green or clay colored and were negative to guaiac at all of four examinations. Three specimens of vomitus showed a positive guaiac; two showed mucus flecked with blood. The fasting contents of the stomach showed free acid 3, total acidity 9. Test meal at half an hour: free acid 49, total acidity 13(?); at one hour free acid 80, total acidity 89. Guaiac was negative on all three.

Before operation the temperature was 96° to 99.6°, the pulse 60 to 100, the respiration normal.

Plain plates of the gall bladder and a Graham test were negative. Examination with a barium enema showed a large amount of barium in the colon obscuring the pyloric end of the stomach and the duodenum. The patient had had breakfast before the examination, which was therefore unsatisfactory. There appeared to be some spasticity and some irregularity of the duodenal cap. The six hour examination showed a medium residue in the stomach. Reëxamination the following day showed a large residue in the stomach at the beginning of the examination. The patient said he had had a glass of milk just before coming from the ward. The esophagus and stomach showed no evidence of organic disease. The duodenal cap was very difficult to visualize and again appeared extremely spastic.

With rest and a diet of crackers and milk the patient improved and in two weeks was apparently symptom-free.

At a repeated x-ray examination the esophagus and stomach appeared normal. The duodenal cap was rotated posteriorly behind the antrum. It remained small and irregular throughout the examination and was filled with considerable difficulty. At the end of six hours the stomach was empty and the barium was distributed throughout the colon.

Following this examination the patient had a great deal of vomiting. Lavage gave 100 cubic centimeters of fluid with free acid 15, total acidity 33, guaiac negative. The stomach was washed with 10 per cent sodium bicarbonate and 50 cubic centimeters was left in with great relief.

It was thought that the patient would not follow a diet and that surgery was the only practicable treatment. Three weeks after admission operation was done. He was in good condition the next day, but on the second day the chart was elevated and there were signs of collapse in the left chest and some gastric stasis. On the third evening he suddenly became irrational and violent. The following day a second operation was done. He continued to be irrational and uncontrollable without paraldehyde. The temperature was 100°, the pulse 160. There were signs of bilateral bronchopneumonia. He had cyanosis, necessitating the use of an oxygen tent. On the seventh day after the first operation he died.

Clinical Discussion

Dr. Richard C. Cabot: "The vomitus was white" probably means that it was colorless, watery. I do not believe it was white.

The blood coating the stools was probably from hemorrhoids.

At nineteen and at twenty-six he had had previous attacks.

"Coffee grounds material" is a very doubtful phrase anyway. Patients almost never say it spontaneously and any amiable patient will say it after you have suggested it. Of course cancer is possible at twenty-nine—we must remember that—but very rare at nineteen.

We can say that in cases of this kind physical examination usually is negative, as it is here.

If I take this examination as correct he never had a normal colored stool at all. They were yellow, green or clay colored but never brown. So I suppose we ought to say there is something affecting the color of the stools. There is not much suggesting gall bladder disease.

Dr. Maurice Fremont-Smith: He was eating mush and milk for two weeks before he entered.

Dr. Cabot: That is a good point. If he kept to that all the time he was here——

Miss Painter: His diet was milk and crackers.

Dr. Cabot: That would give a light-colored stool.

The main thing in the examination of the stomach contents is that he has no achylia. That is the only thing that is significant to me. Acidity examination helps very little in diseases of the stomach except when achylia is constantly found.

"Examination with a barium enema showed a large amount of barium in the colon obscuring the pyloric end of the stomach and the duodenum." That, I take it, is nothing pathologic. It is about time for Dr. Holmes to show us the plates.

Dr. George W. Holmes: We have a large number of films taken of the gastro-intestinal tract here. I will take up the stomach and duodenum first. This is the fundus of the stomach, showing rather prominent rugae. There is a peristaltic wave here, at this point a contraction of the antrum and at this a distinctly outlined pyloric cap. In most of the other films the cap is not visible. With such a large series of films it is rather unusual not to see the duodenal bulb at all. The physician who made the examination says he was able to find one after considerable difficulty and I think we have to accept his statement. If we were to judge from the films alone we should interpret the finding as showing a very rapidly emptying duodenum. We have some indirect evidence that there is trouble with the duodenum, that is, increased peristalsis and a rather large stomach.

There is a small residue in the stomach at the end of six hours and a considerable amount in the colon. There is also some barium scattered through the small bowel. A barium enema gives a better filling. In none of the films is there evidence of a definite lesion.

Dr. Fremont-Smith: Does the depth of the gastric rugae have any significance as indicating long standing obstruction?

Dr. Holmes: I think not, unless we assume a chronic gastritis. Prominent rugae may be due either to chronic gastritis or to lymphoma. But we really do not know what constitutes prominent rugae. They may be of no importance in this case.

Then we have some films of the gall bladder. It is a rather faint shadow, disappearing completely after food, and there are no shadows that we could interpret as stones. A negative Graham test means that we found no evidence of disease in the gall bladder.

Dr. Cabot: The two things in our minds are gall stones and peptic ulcer. If he had had a cancer it almost certainly would have shown up in these films. There is nothing in these films that will exclude an ulcer, and on the whole there are evidences against gall bladder disease, so I suppose their indication is peptic ulcer. I imagine that is what they operated for.

"It was thought that the patient would not follow a diet and that surgery was the only practicable treatment." That gives away their diagnosis. They thought it was peptic ulcer, as I do on the whole. But I have been thinking of only two diseases, which is always dangerous. I have not thought of appendicitis. I do not see any reason why we should think of it or of pancreatic disease, or of any pain referred from the chest or the spine. This pain has a definite relation to meals and a fairly characteristic relief in the way to be expected in ulcer. We certainly have suggestions of stomach pathology. I do not see therefore why we should consider anything more than we have been considering. If so peptic ulcer is probable.

Preoperative Diagnosis

Obstructing duodenal ulcer.

First Operation

Left paramedian incision. A badly indurated duodenal ulcer was found close to the pylorus, apparently obstructing. Because of the condition of the tissue the duodenum could not be mobilized. A routine short loop posterior gastro-enterostomy was done.

Further Discussion

Dr. Holmes: The films that I have are portable films which show a soft mottled dull-

ness throughout the lower part of both lung fields. There is no displacement and no enlargement of the heart. There is no elevation of the diaphragm and no free gas below the diaphragm. Of course a film taken in this position might not show gas below the diaphragm. The possibilities with such an appearance would be bronchopneumonia, massive collapse, bilateral, and infarcts. What evidence we have is against bilateral collapse; the diaphragm does not appear to be elevated; but this lesion is missed frequently. It is extremely difficult to distinguish bilateral collapse from bronchopneumonia by x-ray. Between emboli and bronchopneumonia I do not believe I can make a diagnosis.

A STUDENT: Has enough time elapsed between the time of operation and the time the chest films were taken to say that the collapse was due to emboli?

DR. HOLMES: Collapse may take place immediately.

A STUDENT: Doesn't it take a few days before you get a collapse due to emboli?

DR. HOLMES: I was not referring to collapse due to emboli, but to postoperative collapse. The exact cause here I think is still open to question.

DR. CABOT: Bronchopneumonia I think is the diagnosis most probable.

I do not know what the second operation is unless a reopening of the abdominal wound to see if there is localized peritonitis or general peritonitis which can be relieved.

PREOPERATIVE DIAGNOSIS

Malfunctioning posterior gastro-enterostomy.

SECOND OPERATION

The abdomen was reopened through the previous incision and the anastomosis explored. There was no edema of any consequence and no obvious reason why the anastomosis should malfunction. The opening in the bowel and stomach was demonstrated and was entirely adequate. Some retraction of the enterostomy through the transverse mesocolon had taken place. It seemed doubtful if this would have any bearing. The stomach was contracted. There was no peritonitis, not even fibrin present, and no dilatation. A jejunostomy was done.

FURTHER DISCUSSION

NOTE BY DR. EDWARD L. YOUNG, JR.: This is one of the malfunctioning cases we see in which there is no mechanical cause for trouble. I am very confident that it is due to a disbalance in the patient's body chemistry. This is the third case I have had, the second fatal one. In both fatal cases there was no mechanical cause. If we could recognize these cases we would never operate, for it is a matter of chemical disbalance.

DR. CABOT: It may be true. It is all hypothesis.

NOTE BY DR. YOUNG: Dr. Cabot is perfectly right that it is hypothesis. Our only reason for saying what we do is that autopsy demonstrates the mechanical correctness of the operation.

DR. CABOT: He died, I think, of bronchopneumonia.

A STUDENT: Isn't that unusual with no fever over 100°?

DR. CABOT: It is rather rare, but it does not rule it out.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Duodenal ulcer.
Massive collapse of the left lung.

DR. RICHARD C. CABOT'S DIAGNOSES

Peptic ulcer, probably duodenal.
Bronchopneumonia.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Duodenal ulcers, acute and chronic, with pyloric obstruction.

2. *Secondary or terminal lesions.*

Operative wounds, posterior gastrojejunostomy and jejunostomy.
Bronchopneumonia, bilateral.
Pulmonary edema and congestion.

3. *Historic landmarks.*

Fibrous pleuritis, right.
Anomalous development of the sigmoid colon.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: At autopsy we found a group of ulcers in the duodenum, three of them, one of which seemed to be quite old, the other two much more recent. There was a very marked stenosis of the pylorus and also of a considerable portion of the first part of the duodenum. Between the scarring in the pylorus and the scarring of the duodenum there was one little pocket of duodenum which stuck up like a diverticulum. That may possibly have been the bulb that was seen by x-ray at one time. The duodenum was markedly adherent on the serosal surface to all the surrounding structures, including the colon and the gall bladder. The operative wounds were apparently in perfectly good condition. There was nothing to be made out anatomically as a reason why the enterostomy should not have worked correctly. The final cause of death was a bilateral bronchopneumonia.

CASE 19152

THIRD NERVE PALSY IN A YOUNG GIRL

Neurological Department

Presentation of Case

Dr. Michael E. Murray*: This is the case of a twenty year old single American girl who came to the Outpatient Department because she had had difficulty in raising her left eyelid for five days.

Five weeks prior to her appearance in the Outpatient Department she had suddenly fainted without warning. Her parents said that she simply fell limp and unconscious. Later she vomited twice. She was taken to a hospital. She had no memory for the next twenty-four hours. No lumbar puncture was done at that time. She awakened the next day feeling somewhat drowsy, with a little headache. She did not feel very sick. Within the next two or three days she felt better and after the fifth day she was discharged feeling perfectly well. At the end of that week she went to camp and carried on her camp activities without any difficulty.

A week and a half before her admission to the Massachusetts General Hospital she noticed that she began to have a very sharp fleeting pain over her left eyebrow lasting a few seconds to a few minutes. This became more troublesome, although at no time did she have a very intense headache. A few days later she noticed that her left eyelid was becoming somewhat weak. Five days before she came to the hospital she could not raise it at all. She came in to the Outpatient Department and was sent to the ward immediately.

The family history, social history and occupational history are irrelevant.

The past history is negative. She had never been sick a day in her life before this happened.

On physical examination we saw a fairly well developed and nourished young woman in no distress. Her left eye was completely closed. The teeth were rather dirty. There was a soft systolic murmur at the apex of the heart, not transmitted. Otherwise the physical examination was essentially negative. She was mentally clear, intelligent, and had a good memory. There was no mental aberration whatever.

On neurological examination she showed a left lid which could not be raised. The pupils were dilated, the left larger than the right. The left measured 6.5 millimeters, the right 3.5. The right pupil reacted normally to light and accommodation. The left gave no reaction to light or accommodation. On stimulating the left pupil with light the right gave a consensual reflex, but the reverse did not hold. The extraocular movements were normal in the right eye. The left eye could be moved from the midline laterally, that is all. At rest, if the eyelid were rolled up one could see that the left eye was held pulled over toward the left. The examination was otherwise negative.

The admission urine and blood studies were normal. The white blood count was 9,900, the red blood count 4,800,000. The smear was normal. A blood Wassermann was negative. A lumbar puncture was done. The initial pressure was 100 centimeters of water. The fluid was clear and colorless but showed a faintly positive ammonium sulphate test and a positive alcohol test. There were 29 lymphocytes per cubic millimeter and no red cells. The total protein was 63. The Wassermann was negative.

She stayed in the ward feeling perfectly comfortable at first, with no symptoms except inability to raise the eyelid. On the third day of her stay, however, she had extremely sudden onset of very sharp pain in the frontal region, so severe that it caused her to cry out. She quieted down and was put to bed. Within the next few hours she vomited twice and became a little drowsy. A lumbar puncture was done and some grossly bloody fluid was removed. The initial pressure was 160. She remained a little drowsy for the next three days. She had some headache on the first day, but this gradually quieted down and on the third day she seemed to be better, although drowsy. She developed stiffness of the neck and a positive Kernig. On the third day after that the stiffness of the neck seemed to be increasing and again she had frontal headache. Another lumbar puncture was done. The initial pressure was 250. The fluid was somewhat turbid and xanthochromic. There were 3,680 old red cells and 30 lymphocytes. The total protein was 87. She continued to be drowsy and gradually became less perceptive. She did not seem to notice what was going on about her. When we got her attention she seemed at times to know what we were saying, but she made no attempt to reply. The blood pressure began to rise a little. The stiffness of the neck increased. The Kernig remained positive. She developed a positive Babinski on the right side. During the next three days two more lumbar punctures were done, the initial pressure each time being found to be 260 and dropping down to about 105. The fluid remained xanthochromic, although it was slightly less so during the later punctures. She gradually developed weakness of the right leg, a positive Babinski on the left without any very marked weakness, and then weakness in the right arm. On the eleventh day after admission the right leg was absolutely use-

*Junior interne on the East Medical service.

less, the right arm very weak and the left leg somewhat weak. She gradually became more comatose and began to have some respiratory difficulty and considerable mucus in the throat. That night she died.

Clinical Discussion

Dr. Murray: Our diagnoses were left third nerve palsy and subarachnoid hemorrhage.

Dr. James B. Ayer: I have not heard the result of the autopsy yet, so I am unprejudiced. It sounds as if the patient died of a massive hemorrhage, which is certainly unusual in the location indicated by the preliminary clinical findings, namely nuclear third nerve palsy.

In general third nerve palsy is syphilitic. I suppose if one had fifty cases twenty-five or thirty would be neurosyphilis. That does not seem to be the case here.

Hemorrhage from a tumor in that region would probably not be massive. We have had a number of such hemorrhages and they are not usually massive. Yet one feels from this clinical picture—I do not know the autopsy findings—that massive ventricular hemorrhage is more probable than subarachnoid hemorrhage. I am much interested to know what kind of hemorrhage she had and whether or not it is associated with tumor.

Dr. Wyman Richardson: From the clinical standpoint the suddenness of the onset of headache and the sudden coma, which were the first symptoms she had, were certainly due to hemorrhage into the subarachnoid space, or into the ventricle, as Dr. Ayer suggests. I think that some of us are rather apt to overlook that as a clinical sign. I wonder if it may not be possible that she had an aneurysm. I do not know how to localize an aneurysm to account for all the findings, including hemiplegia.

Dr. Fuller Albright: I should like to say a word, having written a paper on the same syndrome. I never heard of this case, but I do not think there is any possible question but that she had an aneurysm. This case is absolutely typical of thirty-two cases I reviewed under the title, "The Syndrome Produced by Aneurysm at or Near the Junction of the Internal Carotid Artery and the Circle of Willis."* The story is typical,—first sudden rupture, then coma and a latent period of about ten days, then the third nerve symptoms, which are due in most of the cases to the fact that the aneurysm breaks and then forms a sort of false aneurysm which involves the third nerve as it comes near the junction of the internal carotid artery with the circle of Willis, leading to a complete internal and external ophthalmoplegia. The one case that I studied very carefully showed the additional sign that when head pain occurred due to involvement of the fifth nerve, it could be relieved by pressure on the carotid artery in the neck.

*Johns Hopkins Hosp. Bull., 1929, 44:215.

Clinical Diagnosis (From Hospital Record)

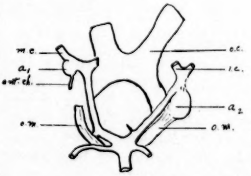
Spontaneous subarachnoid hemorrhage.

Anatomic Diagnoses

Subarachnoid hemorrhage.
Aneurysms (congenital?) of the internal carotid arteries.
Pulmonary congestion and edema.

Pathologic Discussion

Dr. Tracy B. Mallory: As might be expected, the autopsy showed absolutely nothing outside the central nervous system. Dr. Kubik will discuss the pathology.



CASE 19152. Tracing by Dr. Kubik from a photograph of the base of the brain.

O. C. Optic chiasm.
I. C. Internal carotid artery.
M. C. Middle cerebral artery.
O. M. Oculomotor nerve.
a_1 Aneurysm of right side.
a_2 Ruptured aneurysm of left side.
Ant. ch. Anterior choroidal artery.

Dr. Charles S. Kubik: On the right side, in the angle between the middle cerebral and anterior choroidal arteries, there is a small saccular aneurysm with very thin but intact walls.

In the corresponding situation on the left side there is a sac-like structure about 0.5 centimeters in diameter, firmly attached to the third cranial nerve and filled with blood. The third nerve in that region is infiltrated with blood. Since the middle cerebral arteries are not normally attached to the third nerves, this infiltration of the nerve leads to the supposition that a certain amount of oozing first anchored the aneurysm to the nerve and that subsequently further bleeding took place into the nerve. The fact that signs of third nerve paralysis were a relatively late development would fit in with such a supposition.

There are no evidences of arteriosclerosis. Aneurysms of this kind are probably due to a congenital defect of the artery.

Sections through the brain reveal no blood in the ventricles or intracranial hemorrhage. The hemiparesis may have been due to some inter-

ference with the flow of blood through the middle cerebral artery.

It is rather remarkable that this small amount of bleeding should have resulted in increased intracranial pressure, coma, and finally death.

DR. ALBRIGHT: I think it is absolutely typical of these cases. That latent period is extraordinary, but it is very typical—sudden onset and then ten days later third nerve palsy.

The question of treatment is of interest, I think. In our case we tried ligation of the internal carotid artery on that side and the patient developed softening and died, but I still think it might be possible to prevent that result in some cases.

DR. W. JASON MIXTER: I think Dr. Albright is a little enthusiastic. It might be tried. Of course this is a very fatal lesion. At the same time I should not look for very good results from such a procedure. I do not know what the feeling of the men on the Circulatory service would be as to that.

DR. LELAND S. MCKITTRICK: I should be fearful that if the anastomoses between the terminal branches of the internal carotid arteries of the two sides in the region of the circle of Willis were sufficiently free to insure against a paralysis after ligation of the internal carotid on one side, there would still be sufficient arterial pressure from the anastomosing branches of the other side to make it impossible to cure the aneurysm.

DR. ALBRIGHT: When I looked up those thirty-two cases I found that there had been some two hundred cases of arteriovenous aneurysm in the cavernous sinus which had been treated by ligation of the common carotid or the internal carotid artery with surprisingly good results. Furthermore, two of my series had been cured by ligation in the neck. Obviously only those aneurysms which are proximal to the junction with the circle of Willis would be favorable for operation, but these give the same syndrome as the others.

DR. MIXTER: What is the etiology?

DR. MALLORY: It is congenital. I do not know whether anything more is known about it.

DR. HENRY R. VIETS: Occasionally these patients have been operated on for brain tumor. One of Dr. Albright's cases happened to be a case that I reported from Dr. Cushing's clinic*. Dr. Cushing actually operated and saw the aneurysm at the time of the operation, but he felt that nothing could be done about it. The patient died suddenly a year and a half later, probably by rupture of the sac. The symptomatology is perfectly characteristic of aneurysm in this region.

*Jour. Nerv. and Ment. Dis. 47:249, 1918.

The New England
Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY under the jurisdiction of the

COMMITTEE ON PUBLICATIONS

HOMER GAGE, M.D. JOHN W. BARTOL, M.D.
ROGER I. LEE, M.D. ROBERT B. OSGOOD, M.D.
RICHARD M. SMITH, M.D.

EDITORIAL STAFF

REID HUNT, M.D. STEPHEN RUSHMORE, M.D.
JOHN P. SUTHERLAND, M.D. HANS ZINSSER, M.D.
GEORGE R. MINOT, M.D. BENJAMIN WHITE, PH.D.
FRANK H. LAHEY, M.D. HENRY R. VIETS, M.D.
SHIELDS WARREN, M.D. ROBERT N. NYE, M.D.
GEORGE L. TOBEY, JR., M.D. ROBERT M. GREEN, M.D.
C. GUY LANE, M.D. CHARLES C. LUND, M.D.
WILLIAM A. ROGERS, M.D.

WALTER P. BOWERS, M.D., *Managing Editor*

ASSOCIATE EDITORS

GEORGE G. SMITH, M.D. WILLIAM B. BREED, M.D.
JOSEPH GARLAND, M.D.

THE NEW HAMPSHIRE MEDICAL SOCIETY
PUBLICATION COMMITTEE

D. E. SULLIVAN, M.D. H. H. AMSDEN, M.D.
R. H. MARCOTTE, M.D.

THE VERMONT STATE MEDICAL SOCIETY
PUBLICATION COMMITTEE

WILLIAM G. RICKER, M.D. C. F. DALTON, M.D.
E. A. STANLEY, M.D.

SUBSCRIPTION TERMS: *$6.00 per year in advance, postage paid for the United States, Canada $7.04 per year, $8.52 per year for all foreign countries belonging to the Postal Union.*

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 8 The Fenway.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The New England Journal of Medicine, 8 The Fenway, Boston, Mass.

FALLACY OF UNCORRECTED MORTALITY RATES AS A MEASURE OF THE EFFECTIVENESS OF THERAPY

CAN any well-informed physician or layman deny that recent advances in the treatment of diabetes, cancer and the puerperal state have resulted in more efficient therapy? Mortality statistics, however, fail to disclose any decrease in death rate and, to many, this is evidence of therapeutic ineffectiveness. Miller[1], in a recent article in this *Journal*, has called attention to the inaccuracy of mortality rates for such purposes and has laid chief blame on the "Manual of Joint Causes," published by the U. S. Bureau of the Census, which specifies precisely what must be certified as the primary cause of death. For example, with a patient suffering from a slowly growing non-metastasizing epithelioma and dying from a typical acute lobar pneumonia, the death *must* be recorded as due to cancer. Such rules and regulations, according to Pearl[2], result in figures representative more of morbidity than of mortality. The figures given by Joslin[3] for the cause of death among Jewish diabetics is a more concrete example of the inaccuracy of such figures. Before the days of insulin treatment, diabetic coma was the cause of death in about 64 per cent of his cases, whereas coma or diabetes *per se* accounted for only 14 per cent of the deaths of insulin treated patients. In both series, however, diabetes would be recorded officially as the primary cause of death in the majority of instances.

Several other factors must be considered in preparing sets of figures that are significant. Among the foremost is the marked increase in the average age of death. It is not surprising that the mortality rates of diseases associated with middle to old age, such as cancer and diabetes, have risen when one considers that the average age of death in 1860 was 23 and in 1920 was 42[3]. Another factor is the increased accuracy of diagnosis, brought about by the increase of knowledge, education of the medical profession and more adequate diagnostic methods. Still another is hospitalization, particularly applicable to cases of malignant disease and due, principally, to education of the public. This has resulted in early diagnosis of cancer and undoubted cures following proper therapy; but, statistically, the decreases in mortality are more than counterbalanced by deaths in such a diagnosed group from causes which are absolutely unrelated to the existing cancer. And, finally, allowances for the average age of death in a given disease, corrected for the general increase in longevity, must be made. Assuming that insulin has increased the average age of death of diabetics from 45 to 54, as stated by Joslin[3], one would expect a moderate decrease in mortality rate for a few years with a gradual return to the former rate in 8 or 10 years. Insulin has failed to prevent death, but it has prolonged life appreciably.

To our perennial antagonists, the anti-vivisectionists, uncorrected mortality rates are a godsend. Do they not prove that all work on experimental animals has amounted to nothing? One has to have intimate contact with only one successfully treated case of diabetes in a small child to appreciate the value of insulin and to champion the methods of experimentation which made its discovery possible. Let us hope that figures more representative of conditions which actually exist can be obtained in the near future; not only to rectify the false impressions made on physicians regarding the effectiveness of modern therapy, but also to prevent furnishing the anti-vivisectionists with powerful ammunition for combating the methods responsible for many of our advances in therapy.

REFERENCES

1 Miller, J. R.: Do official death rates for diabetes, cancer and the puerperal state accurately reflect present conditions? New Eng. J. Med. 208:490-491 (Mar. 2) 1933.
2 Pearl, Raymond: Introduction to Medical Biometry and Statistics. Philadelphia, W. B. Saunders Co., 1923.
3 Joslin, E. P.: The Treatment of Diabetes Mellitus. Philadelphia, Lea and Febiger, 1928.

REDUCED FEES FOR INDUSTRIAL ACCIDENT WORK

INFORMATION has been submitted to this office that a certain insurance company has been getting competitive agreements among doctors for fees for industrial accident work. The proposition is that the fee for house calls is to be reduced from $3.00 to $2.50 and that for office service from $2.00 to $1.50. One of the doctors who would be affected by this reduction has appealed to the Industrial Accident Board and the Board has assured him that the original prices will be approved by the Board. The question is as to whether physicians will bid for the business by reducing the approved fees. If there is unanimity of action the prices can be kept as they now are.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

BRANCH, CHARLES F. M.D. University of Vermont 1923. Professor of Pathology, Boston University School of Medicine. Pathologist to the Massachusetts Memorial Hospitals, etc. His subject is "A Brief Review of the Essential Pathology of Pericarditis." Page 771. Address: 80 East Concord Street, Boston.

LEVINE, SAMUEL A. A.B., M.D. Harvard University Medical School 1914. Assistant Professor of Medicine, Harvard University Medical School. Senior Associate in Medicine, Peter Bent Brigham Hospital. Visiting Physician, Beth Israel Hospital. His subject is "Medical Aspects of Pericarditis." Page 773. Address: 270 Commonwealth Avenue, Boston.

CHURCHILL, EDWARD DELOS. M.A., M.D. Harvard University Medical School 1920. John Homans Professor of Surgery, Harvard University Medical School. Chief of the West Surgical Service, Massachusetts General Hospital. His subject is "Surgical Aspects of Pericarditis." Page 774. Address: Massachusetts General Hospital, Boston.

LUND, CHARLES C. A.B., M.D. Harvard University Medical School 1920. F.A.C.S. Surgeon, Collis P. Huntington Memorial Hospital. Assistant Visiting Surgeon, Boston City Hospital. Instructor in Surgery, Harvard University Medical School. Address: 319 Longwood Avenue, Boston. Associated with him is

HOLTON, HILDA M. B.S. Simmons College 1929. Technician, Huntington Memorial Hospital. Address: 94 Boston Avenue, West Medford, Mass. Their subject is "Carcinoma of the Buccal Mucosa. End Results 1918-1926." Page 775.

ANDERSON, GAYLORD W. A.B., M.D. Harvard University Medical School 1928. Director, Division of Communicable Diseases, Massachusetts Department of Public Health. Address: 546 State House, Boston. Associated with him is

BIGELOW, GEORGE H. A.B., M.D. Harvard University Medical School 1916. Commissioner of Public Health for Massachusetts. Address: State House, Boston. Their subject is "Diphtheria Immunization and the Private Practitioner." Page 781.

HOFFMAN, FREDERICK L. LL.D. Director, American Society for the Control of Cancer. Consulting Statistician, Prudential Insurance Company. His subject is "Cancer Mortality of Massachusetts, 1860-1929." Page 782. Address: Wellesley Hills, Mass.

ROTH, FRANCES L. LL.B. New York University Law School 1917. Assistant City Attorney, City Court of New Haven, Connecticut. Her subject is "The Present Development of Psychiatric Technique in the Criminal Process." Page 785. Address: 205 Church Street, New Haven, Conn.

MCGINN, SYLVESTER, M.D., AND SPRAGUE, HOWARD B., M.D. For further information see This Week's Issue, page 708, issue of March 30, 1933.

MISCELLANY

A RADIO MESSAGE PREPARED AND SPONSORED BY THE COMMITTEE ON PUBLIC EDUCATION OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE DEPARTMENT OF PUBLIC HEALTH

BOYS' CAMPS AND MOUNTAIN TRAILS*

BY R. C. LARRABEE, M.D.

Are you going to send your boy to camp this summer? If so, to what camp? Of course you'll consider the general standards, social, moral, and intellectual. And you will not neglect the question of health. You know the boy is going to live out-of-doors—that's why you send him away. And you know that outdoors doesn't mean sitting idly on a porch, like a consumptive. He's going to play games, some of which are rough. He's going to paddle a canoe and swim. Probably he will ride a horse and even shoot a rifle. The camp prospectus will tell you that his games are supervised, that an experienced counsellor will watch his canoeing, teach him to swim, and will always be at hand to

*Station WBZ, April 4, 1933, 4:30 P.M.

see that he does nothing rash and to rescue him in case of a mishap. In riding and in handling firearms, equal care is promised. But *promises* will not satisfy you, you're going to look up some of those references and make sure that these obviously dangerous activities really are carefully safeguarded.

But the prospectus will say something about "hiking". Are you going to be equally careful about that? You may have in mind a delightful stroll of a few miles through the woods on a clear path, a fine view from a hilltop, a moonlight night in a tent by the side of a brook and a return to camp next day by a different route. Well, it may be just that. But, do you ask how much of a load that ten-year-old youngster must carry on his back? Will he be allowed to swing a keen-bladed axe alone in the woods? Will the counsellor notice that belt-knife in a flimsy guard worn where it will stab him in the groin when he jumps off a stone wall? Will the counsellor *know* that the brook does not receive the drainage of a farm a mile up-stream. If it rains on the second day, must that poor, tired, little chap, after a sleepless night, with a bellyache from half-cooked food, walk ten miles in the wet along a state road full of automobiles with obstructed windshields, trying to catch up with a counsellor and the older boys hurrying home a mile ahead? You've slowed down your car for such groups more than once.

If your boy is going to camp within reach of the White Mountains, the culmination of the season's "hiking" will probably be a trip over the Mt. Washington Range. Perhaps they will spend the nights in tents or open lean-to shelters, perhaps in the comfortable huts of the Appalachian Mountain Club. They will visit the most delightful playgrounds, for boy or for grown man, that New England affords. If the trip is well run, your boy will derive pleasure and profit from it, regardless of whether it rains or shines. It may be the beginning of a lifetime of love for the outdoors, of inspiring appreciation of wide expanse and noble view; it may lead him to cultivate woodcraft and the self-reliance that comes from the confidence of his ability to take care of himself. *But only if the trip is properly planned and executed.*

Now, I'm sorry to say, that some of these trips by boys' camps are *not* properly handled. Perhaps the commonest fault is that the distance covered in a day is too great. Of course no boy will ever admit this fact; he'll always say he had a good time, and he's doubtless truthful, in retrospect. But if he's done himself up daily for a week, blistered his feet, upset his stomach, and miserably failed in his efforts to keep up with older boys, he's not going to be keen for more.

And this isn't the worst of it. For some years those in charge of the Appalachian Club huts, the rangers of the National Forest, and others have viewed with increasing apprehension the careless methods of some camps. Again and again they have been discussed at the annual meetings of the New England Trail Conference.

Our New England mountains do not rank with the world's highest, but a long series of fatalities tell that Mt. Washington insists upon being treated with respect. The principal trails are most excellent, but they are not city streets nor graveled walks through public parks. Miles of them are above tree-line and are marked only by cairns. They are easily followed in good weather; but one doesn't like to think of one's own boy away up there in a howling thunderstorm, perhaps sleet, hail, or snow. Too often the lines of boys will be strung out, the counsellor at the head, the older boys behind him and some of the younger and weaker ones a mile or more in the rear. The hut men tell of one such group which spent the night at the Summit House on Mt. Washington. Only when, upon registering, the clerk asked the leader if he had not brought the number of boys for whom reservations had been made, was it realized that one was missing. He was finally found, after dark, played out in the fog and sleet a mile down the trail. Another camp turned its boys out on the road to hitch-hike to Pinkham Notch and then climb Mt. Washington; the so-called leader never knew the number enrolled for the trip, and stragglers were going up Tuckerman Ravine Trail for two days!

Of course these are extreme examples; but such carelessness is all too frequent. I must admit that so far no loss of life has resulted. Why not, Heaven only knows. Unless there is a reform, a catastrophe involving serious loss of life is inevitable.

We certainly should not wait till the horse is stolen before we lock the stable door. The attention of the camps has been called to the danger, by circular letters of warning, with suggestions for routes of retreat in bad weather. Some have responded and on the whole, according to Mr. J. B. Dodge, who has charge of the A. M. C. huts, there has been marked improvement in the last decade. It is only fair to say that there *are* camps that run, and always *have* run, their trips judiciously and carefully. But we wish you parents to step in and make them *all* take reasonable care. *You*, and you only, can insist that trips over mountain trails shall receive the same cautious oversight as the more obviously risky swimming, boating and shooting.

I am aware that blank cartridges only frighten the innocent without hurting the guilty. So I should like to name some of the good camps and some of the bad ones. But as there is no public grading of all camps and as no "awards of merit" have ever been made, this is obviously impossible.

I realize, too, that my criticisms have been wholly destructive and I have not tried to tell how the dangers may be averted. My object today is merely to call the attention of parents to a serious dan-

ger in order that they may insist upon reform. The carrying out of this reform is a matter for the managers of the camps themselves. If any of my listeners are interested in the actual management of such camps, I would recommend for their consideration a pamphlet entitled "The Summer Camp on the Trail," from which I have drawn freely in preparing this broadcast. It is Publication No. 18 of the New England Trail Conference. Copies may be obtained from the Appalachian Mountain Club in Boston.

REPORT ON THE SIXTH INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY

The Hague, Netherlands,
June, 1931.

Report of Commander William Seaman Bainbridge, M. C.-F., U. S. N. R., for the delegation from the United States of America. U. S. Government Printing Office, Washington, 1933. Price $1.00.

This report has taken up the following subjects:

1. Recruiting and Training of Military Medical Officers and Pharmacists.
2. Psychoneurosis of War.
3. Methods of Hemostasis in the Battlefield.
4. Preparation and Storage of Medicinal Ampules in Use in the Naval and Military Medical Services.
5. Sequelae of War Wounds of Teeth and Maxilla.
6. General Conclusions of the Congress.

Perhaps the most interesting reports of the present Congress are those on the *psychoneurosis of war* and the *methods of hemostasis on the battlefield.*

Concerning the recruiting and training of military officers and pharmacists, the Congress expressed the wish that the various nations would favorably regard the proposal of an exchange of officers of the medical services among the different nations. The training of military officers and pharmacists must, however, be left to the civilian faculties.

It is of interest to note in the section on the psychoneurosis of war that, in the United States forces, approximately 82,392 rejected drafted men were said to have had nervous or mental disabilities, and of this number 39,095 showed the presence of mental deficiency. From 1917 to 1919 inclusive, 78,930 men and women were discharged from military service on account of some neuropsychiatric disease, and this number constituted 25 per cent of the total number of men discharged from the military service for disabilities.

In the section on methods of hemostasis on the battlefield, the dangers of the tourniquet are stressed, "a nearly always useless, and always dangerous, measure, especially in non-professional hands". It was found advisable to continue the research indicated in the "Outline" reports with the view of eliminating the dangers of ischemia from the application of the tourniquet. "The essential question is apparently that of instruction of subordinate personnel."

The Congress expresses the hope that this instruction will be standardized in all armies.

The sixth report of the International Congress of Military Medicine and Pharmacy will prove as interesting and instructive to the reader as the former reports have been.

MOTHER'S DAY

Educational publicity material concerning maternity care is now available for the third annual Mother's Day Campaign sponsored by the Maternity Center Association, 1 East 57th Street, New York City. Ideas and suggestions for local meetings, luncheons and radio talks and newspaper publicity, will be forwarded without charge to any group wishing to devote the observance of the day to improving maternity care. Mother's Day falls on May 14, and the plan calls for activities during the preceding week. The association urges that emphasis be placed this year on conditions surrounding the delivery of the infant, without in any way belittling the importance of prenatal care. Subjects for principal attention are to be the factors involving selection of the attending physician, and the problem of whether to go to a hospital or have the baby at home. — *Bulletin of the National Tuberculosis Association.*

BOYS' HEALTH DAY

Thursday, May 4, is Boys' Health Day and Evening at Home During National Boys' Week.

This period of intensive concentration on boys is being sponsored by the National Boys' Week Committee with headquarters in Chicago.

The Purpose of Boys' Health Day and Evening at Home is primarily:

To stress the responsibility of the family for the boy's welfare.

To emphasize the importance of home training in social hygiene.

To recognize the home as one of the most important character-building institutions.

To impress upon parents the fact that the home should serve as a headquarters for the boy and his companions.

To develop the right attitude toward home, parents, brothers, and sisters, as expressed in a willingness to coöperate and assume a definite responsibility.—*Bulletin of the National Tuberculosis Association.*

IN TEXAS

In connection with a five-year coöperative plan for tuberculosis prevention, adopted in 1931 by the Texas Tuberculosis Association, over 25,000 children have been tuberculin tested in Abilene, Austin, Dallas, Houston and Harris County, Port Arthur

San Antonio and Waco, in coöperation with their respective county tuberculosis associations. Where possible, the State Association staff helps in executing this work. A series of four reprints of articles on phases of childhood tuberculosis written by Texas physicians features this campaign.

Not least important is the legislative plan. Bringing Texas, the last and largest state, into the Registration Area interests all health workers. This five-year plan launched under the presidency of Dr. Elva C. Wright of Houston is advancing under the presidency of Dr. John Potts of Fort Worth.—*Bulletin of the National Tuberculosis Association.*

MORTALITY RATES

Telegraphic returns from 85 cities with a total population of thirty-seven million for the week ending March 25, indicate a mortality rate of 11.7 as against a rate of 13.5 for the corresponding week of last year. The highest rate (20.1) appears for Nashville, Tenn., and the lowest (5.6) for Duluth, Minn. The highest infant mortality rate (18.3) appears for Fall River, Mass., and the lowest for Canton, O., Duluth, Minn., Fort Wayne, Ind., Knoxville, Tenn., Lynn, Mass., Omaha, Neb., Portland, Ore., and Worcester, Mass., which reported no infant mortality.

The annual rate for 85 cities is 12.3 for the twelve weeks of 1933, as against a rate of 12.6 for the corresponding period of the previous year.—*Bulletin Bureau of the Census.*

CORRESPONDENCE

A LETTER TO THE PUBLIC HEALTH COMMITTEE OF THE LEGISLATURE

15 Grosvenor Road,
Jamaica Plain, Massachusetts.
February 1, 1933.

I am writing in regard to House 661, requiring local Health Officers to be licensed by the State Commissioner of Public Health.

This is another sample of legislation which finds support from people who are willing to endorse any legislation purporting to have a desirable object and who do not stop to consider how the proposed law is worded or whether it is otherwise capable of accomplishing the desired purpose.

It is only possible to discuss this Bill in a general way because nobody can tell at present to whom it will apply. The terms "health officer" and "executive of a board of health" have never been legally defined, and the "agent of a board of health" only by implication in Section 30 of Chapter 111 of the General Laws.

The following may be cited as a concrete example of the kind of problems which will follow its enactment. About the time this proposed legislation will go into effect, if enacted, it may be necessary to fill the position, made vacant by retirement of an *executive officer* of the Boston Health Department, the Deputy Commissioner of the Sanitary Division. Under existing law, the State Civil Service Commission will determine the qualifications of the person who will be appointed to this position. Under the proposed law, it will have to be authoritatively stated whether a Deputy Commissioner of the Boston Health Department is "local health officer" or "an executive," or an "agent of the Board of Health" and whether the qualifications of candidates must be approved by the State Civil Service Commission or by the State Health Commissioner before an appointee to the position just mentioned may be legally paid his salary.

To take another illustration of the proposed law. An "agent of a board of health" is an administrative device created by Section 30 of Chapter 111 of the General Laws, whereby for practical administrative purposes a Board of Health may vest its authority in a specified individual. The Board may thus delegate practically all its authority, and this is what the proposed law probably contemplates, but more often a Board of Health makes a person its agent for some specified limited purpose in order to secure legality for certain official acts. For example, a clerk in connection with ordinary clerical duties is designated as the Board's "agent" for making investigations of cases and conducting transactions in connection with the establishment of a city's or town's liability under the settlement laws. In times of epidemics, policemen are made "agents" of the Board of Health for the purpose of establishing legal quarantines.

To pervert the purpose of Section 30 of Chapter 111 of the General Laws and require that only licensees of the State Health Commissioner may act as the "agent of a Board of Health" will introduce entirely unnecessary complications and expense in the performance of routine duties of a Board of Health.

The idea of having a blanket license to cover any and all qualifications which may be demanded of whatever a "local health officer" or "executive" may eventually be decided to be will likewise tend to increase, unnecessarily, costs of administration both by requiring knowledge which may not be needed in certain positions and by failing to provide for special experience which may be demanded as a plain business proposition in some positions.

Most of the persons now employed in this State at public expense in connection with the administration of laws relating to public health have to have their qualifications to perform their particular duties determined by the State Civil Service Commission.

If it be deemed advisable to raise the standard of qualifications of persons so employed why should not this be done through the State Agency which has been created for this very purpose, the State Civil Service Commission?

If the determination of the fitness of the person responsible for the control of contagious diseases in a town should be vested in the State Health Commissioner, why should not the State Commissioner of Public Works qualify a person to act as a local building inspector?

These questions are certainly pertinent because when the State Civil Service Commission is asked to determine the qualifications of a person to fill a position requiring special knowledge or experience in public health administration it is the usual practice of the Civil Service Commission to call on the State Department of Public Health to formulate, or to recommend some person to formulate, the examination questions, to mark the answers and to appraise the value to be put on the candidate's experience. The State Commissioner of Public Health, therefore, practically has it now within his power through coöperation with the State Civil Service Commission to raise the standard of qualifications for employment in connection with the administration of health laws throughout the State.

House 661 did not originate with the Massachusetts Civic League. Several years ago the undersigned was one of those who endorsed the proposition and started it on the career which it has since had. While the undersigned has never approved the indefinite trouble-making phraseology of House 661, he did feel willing to support the idea of having the State Health Commissioner determine the qualifications of persons to be employed in the various positions made necessary for the administration of laws relating to Public Health. He then felt the proposition to be justifiable as a means of stimulating people entrusted with the administration of these laws to acquire knowledge which they ought to possess. He has since, however, in the light of further official experience, become convinced that the procedure is unwise and that these persons had better be made to qualify themselves to earn their pay through the regular machinery already provided by our State Government for this purpose, the State Civil Service Commission.

Besides the objections to the proposed legislation alluded to in the foregoing, the following were also considerations which influenced the undersigned to change his mind in this matter:

Some years ago, attempts were made at various educational institutions to give special instruction with view to qualifying students to fill positions having in view the protection or promotion of Public Health. This idea has been favored and to some extent subsidized by the Rockefeller Foundation. In this part of the country, "Schools of Public Health" have been established at Johns Hopkins, at Harvard University and at the Massachusetts Institute of Technology which give the degree of "Doctor of Public Health." The last-named institution does not require a medical education as a prerequisite for the granting of the degree of "Doctor of Public Health."

The purpose of these schools to provide instruction in approved methods having in view the betterment of public health is most praiseworthy and the schools deserve to be encouraged. The patronage of these schools, has, however, been disappointing, both in regard to the number and the type of persons that have taken advantage of the educational opportunities thus offered. To a noteworthy extent, the students have been foreigners whose tuition has been paid by the Rockefeller Foundation. Of the 32 graduates of the Johns Hopkins School of Public Health in 1931, who received the degree of Doctor of Public Health, seventeen were aliens and not one of the remainder was a resident of Maryland in which the school is located. Virtually, the same condition obtains with respect to the Public Health Schools located in Massachusetts.

Active proponents of House 661 and of its predecessors of similar purport have been salaried teachers in Schools of Public Health and officials of the State Department of Health who, as instructors or lecturers in such schools, presumably receive an "honorarium" depending in amount upon the financial prosperity of the schools.

Instruction in a School of Public Health is not the only means by which a person may acquire the knowledge taught in them with view to increasing proficiency in Public Health work. As in any other business the best training is to be acquired "on the job," with the requirement that such knowledge as needs to be obtained elsewhere must be shown as a condition for promotion.

It is not necessary to assume that the present or future State Health Commissioner is going to make a market for graduates of these schools by forcing cities and towns to employ non-resident "Doctors of Public Health" at their own price, as the proposed law will give them the power to do. The proposed legislation is objectionable because it creates a situation which it is wise to avoid. In itself, the vesting in a State official of such power to control public employment in cities and towns and to dictate the management of local affairs is not only an unjustifiable encroachment on local self-government, but practically is not good public policy. The Mayor of a City may be so brainless or indifferent as to select for the head of his Health Department a man who is going to discredit the Mayor himself, but the proper remedy is not to give a State official an irresponsible dictatorship in the management of municipal affairs.

Those engaged in efforts to improve public health certainly ought to know more. The public would be better off if even "Doctors of Public Health" knew as much about biology and pathology as they do about devices for spending public funds. Something else is needed, however, to make a good public health official than what can be acquired in a "School of Public Health." It is far more essential to be naturally endowed with common sense and a personality which commands con-

fidence and respect. A person with these attributes will have the gumption to acquire special technical knowledge himself or avail himself of the services of others who possess it.

Threatened municipal bankruptcy led Mayor Moore of Philadelphia to oust the Director of Public Health, a "progressive" public health officeholder, and appoint in his place Dr. J. Norman Henry, a public-spirited citizen of prominence, a trustee of a large university, a physician of the highest professional standing, and a man who had demonstrated exceptional administrative ability in various fields, yet Dr. Henry's previous experience would not have qualified him for a license as an "agent of the Board of Health" under the system which it is proposed to set up here in Massachusetts.

The taxpayers of a small city or town cannot support these modern elaborate public health programs. The average board of health official in a Massachusetts city or town is honest and conscientious. If undertaken in the right way, much can be done to increase his efficiency. He recognizes the limitations of his medical and biological knowledge. Financial conditions prevent him from attending courses in Schools of Public Health, but he is responsive to instruction provided that it be brought to him in an assimilable form by someone in whom he has confidence. He is entirely capable of utilizing practically such knowledge as we possess which can be positively and unquestionably applied for the protection and promotion of Public Health. He is, however, likely to have his own ideas regarding matters of public policy.

Those who cannot command the confidence of the average Massachusetts city or town official do not find him tractable. He intentively recognizes so much of the present-day health propaganda as "bunk" that he may develop a prejudice against that which is actually of value. He may be unwilling to concede that some health promotion projects which are not producing tangible results that can furnish an excuse for their cost are justifiable as experiments in communities which can afford to support them. The average small town or city board of health official in Massachusetts looks with misgivings on measures which are making permanent paupers of the very elements in his community that need the most to be stimulated to self-reliance.

He is not sympathetic with the socialistic schemes that have brought about our present insupportable burden of government. For these two reasons we see this Bill 661 which is calculated to eliminate the present local health official rather than to educate him. Coupled with it, we hear the slogan "more full-time health officers at adequate salaries".

The Public Health Committee will probably be told that House 661 has been approved by the local health officials themselves. It is true that it was approved at a meeting of the Massachusetts Association of Boards of Health on January 26, 1933, but this is not the whole truth. At present a large proportion of the members of this Association are not officially connected with any local board of health. At the January twenty-sixth meeting the attendance was unusually small. House 661 was presented near the close of the meeting when many had left. The Bill had not been printed. It was not even deemed necessary to read it before asking his approval. A protest that the regular procedure be followed of referring this Bill with other proposed legislation to the Executive Committee for consideration and recommendation before action by the Association was voted down. The Association has a membership of about 140. House 661 was approved by a vote of 14 to 11. Of the 14 at least 8 were on the teaching staff of a School of Public Health. Approval of the Association of a similar bill last year was secured in a somewhat similar way.

In protesting against House 661, I am representing nobody but myself, a citizen and a taxpayer. I rely on over twenty years' experience as an officer in the United States Public Health Service and ten years as Deputy Commissioner in the Boston Health Department to justify my opinion that as an administrative policy the proposed legislation is unwise.

I cannot see that its enactment will affect me adversely as a public employee. I have no doubt of my ability to qualify for a license under its provisions if I wished to do so. The remainder of my official career would undoubtedly be pleasanter were I to remain silent, and I would probably do so were I not seeing the resources which I expected to support me in my old age rapidly vanishing as the result of the cost of ill-advised legislation "to promote general welfare," pushed through by unopposed organized emotional support.

Very truly yours,

VICTOR SAFFORD.

A SEQUEL TO A FORMER REPORT

April 3, 1933.

The Editor,
New England Journal of Medicine,

An interesting sequel to the cases of dermatitis from rubber gloves discussed in my article published in the January twenty-sixth issue of the *Journal* is that since the discovery of the irritating brand of rubber gloves there have no new cases of dermatitis among the linemen. However, on March 6, H. M. reported complaining of a dermatitis of his left hand and wrist. On physical examination, he showed a marked redness of the entire dorsum of the left hand, and of the anterior and posterior surfaces of the left wrist with edema, desquamation, and numerous fine papules. Investigation of his work showed that he cleaned the old electric globes in muriatic acid and hot water. It was also found that this man had been wearing one black glove and one chocolate-colored glove of the

same brand which had caused previous cases and which had been discarded by the linemen as they did not pass the required electrical test. This glove was discarded before the previous cases were reported and in this way was not destroyed when a check-up of these gloves was made. The hand on which he wore the black glove showed no signs of any irritation. His dermatitis was relieved in three weeks by the application of a simple soothing lotion and paste.

Sincerely yours,
J. G. DOWNING, M.D.

THE OLDEST ASSOCIATION OF SPECIALISTS

The Commonwealth of Massachusetts
Department of Mental Diseases

Boston Psychopathic Hospital
74 Fenwood Road
Boston, Mass.

April 3, 1933.

Editor, The *New England Journal of Medicine*,

In the editorial of your number of March 30, 1933, in which you discuss the control of specialization in medicine, the statement is made, "In the United States the earliest national society of specialists, the ophthalmological society, was founded in 1864." As a matter of fact, the oldest association of specialists in the United States is the American Psychiatric Association which from 1893 to 1913 was called the American Medico-Psychological Association, but which from 1844, the year of its foundation, to 1893 was known as the Association of Medical Superintendents of American Institutions for the Insane. The first meeting of this Association was held on the sixteenth of October, 1844, at Jones' Hotel in the City of Philadelphia.

Yours truly,
C. MACFIE CAMPBELL, M.D.

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.,
March 31, 1933.

Managing Editor,
The *New England Journal of Medicine*,

In addition to the articles enumerated in our letter of February 25 the following have been accepted:

Don Baxter Intravenous Products Corporation
- Sterile 2½% Dextrose Solution in Vacoliter Container
- Sterile 7½% Dextrose Solution in Vacoliter Container
- Sterile 20% Dextrose Solution in Vacoliter Container
- Sterile 25% Dextrose Solution in Vacoliter Container

Bilhuber-Knoll Corporation
- Metrazol Solution 10 per cent

Diarsenol Co., Inc.
- Neodiarsenol, 1.5 Gm. Ampoules
- Neodiarsenol, 3 Gm. Ampoules
- Neodiarsenol, 4.5 Gm. Ampoules

Hixson Laboratories, Inc.
- Diphtheria Toxin-Antitoxin Mixture 0.1 L+
- Diphtheria Toxin-Antitoxin Mixture 0.1 L+ (Sheep)
- Diphtheria Toxoid
  - Diphtheria Toxoid two 1 cc. vial package
  - Diphtheria Toxoid one 10 cc. vial package
  - Diphtheria Toxoid one 30 cc. vial package
  - Diphtheria Toxoid twenty 1 cc. vial package

Lederle Laboratories, Inc.
- Plantain Pollen Antigen—Lederle

Merck & Co., Inc.
- Chlorbutanol (Hydrous)—Merck
- Chlorbutanol (Anhydrous)—Merck
- Neocinchophen—Merck

The following products have been included in the List of Articles and Brands Accepted by the Council But Not Described in N.N.R. (New and Nonofficial Remedies, 1933, p. 437):

Merck & Co., Inc.
- Bismuth Betanaphthol—Merck
- Bismuth Subsalicylate—Merck
- Phenobarbital—Merck
- Procaine Crystals—Merck
- Thymol Iodine—Merck

Yours sincerely,
PAUL NICHOLAS LEECH, *Secretary*,
Council on Pharmacy and Chemistry.

RECENT DEATH

CRITTENDEN—DR. HARRISON MURRAY CRITTENDEN of 105½ Winter Street, Haverhill, Massachusetts, died in that city April 5, 1933, after a long period of ill health which did not fully incapacitate him until within a few days of his death.

Dr. Crittenden was born in Plaistow, New Hampshire, September 2, 1874, the son of the late Dr. Rufus A. Crittenden and Mrs. Annie Murray Crittenden. He came to Haverhill early in life and after his premedical education in the schools of Haverhill he studied medicine at and graduated from Tufts College Medical School in 1898. He practiced in Haverhill for thirty-five years serving on the City Hospital staff from the founding of this institution and continuing when it was changed to the Gale Hospital and later to the present municipal hospital. He served as City Physician for most of the past twelve years, was active in the affairs of the Pentucket Medical Society and was a Fellow of the Massachusetts Medical Society. He is survived by a sister, Mrs. Carroll Still, a brother Rufus A. Crittenden, his step-mother, Mrs. R. A. Crittenden, and a half-brother, Donald Crittenden.

NOTICES

THIRD INTERNATIONAL HOSPITAL ASSOCIATION

Invitations to attend the sessions of the International Hospital Association Congress at Knocke sur Mer (Belgium) from June 28 to July 3, 1933, have been issued to all Officials, Associations, Institutions, and persons who are interested in the construction, administration, and development of hospitals. The world crisis has placed the tasks which the hospitals of our day have to fulfill in such a strong and clear light that the necessity has made itself felt more than ever of exchanging the views of the different countries, and coming to an international understanding of the proper plans on which important questions should be answered. The reports of the *10 International Study Committees* will be laid before this Congress. These have been arrived at by an international exchange of views by outstanding specialists of different countries. These reports will in part contain suggestions for common international principles, their purpose being not to form one uniform system, but to bring about a general perfecting and improvement in the hospital system.

The references for these committees are the following:

1. Construction. 2 Equipment and technique. 3. Administration and housekeeping. 4. Finance and bookkeeping. 5. Legislation. 6. Care of the patient in the hospital. 7. Patients' food. 8. Personnel. 9. Statistics. 10. Outside connections with the hospital.

All the reports which will be read before the Congress will appear in the April number of *Nosokomeion*, the official organ of the Association, published by W. Kohlhammer, Stuttgart.

The opening sitting of the Congress will take place on Wednesday, June 28, at 5 P.M. The reports of the committees and subcommittees will be fully discussed at the plenary sitting on July 1, 2, and 3. The results arrived at the full gathering will be forwarded to the League of Nations and the respective Governments.

From July 4 to 9 there will be a five days' Study Journey through Holland, which will enable the Congress not only to see the new hospitals but the classic places, the centres of industry and scenery of Holland.

Notifications should be addressed to the Belgium Hospital Association (Association Belge des Hôpitaux), 80 rue de Livourne, Brussels, together with a contribution of two dollars. The members of the International Hospital Association who pay a yearly contribution of five dollars can attend the Congress without further payment. In addition they receive the organ of the society, *Nosokomeion*.

All communications, questions, reports, and suggestions should be addressed to Dr. W. Alter, Ernst Ludwig Allee 2, Buchschlag, Hessen, Germany.

Detailed programs can be obtained free of charge from Messrs. W. Kohlhammer, Verlag, Urbanstrasse 12/16, Stuttgart.

CLINIC IN MEDICINE AT PETER BENT BRIGHAM HOSPITAL

On Thursday, April 20, at 3:30 P.M., Dr. Charles F. Elliott, Professor of Medicine at Northwestern University Medical School, Chicago, and Physician-in-Chief, *pro tempore*, Peter Bent Brigham Hospital, will give a clinic in the Amphitheatre of the Peter Bent Brigham Hospital which members of the medical profession are cordially invited to attend.

Physicians and medical students are also invited to attend ward rounds of the Medical Staff of the Peter Bent Brigham Hospital held from 10-12 o'clock on Saturdays, as well as a clinical-pathological demonstration immediately following these rounds.

THE EDWARD K. DUNHAM LECTURES FOR THE PROMOTION OF THE MEDICAL SCIENCES, 1932-33

Thursday, May 4, "Humoral Transmission of the Nerve Impulse."

Thursday, May 11, "Regulation and Adaptation."

At five o'clock at the Harvard Medical School Amphitheater, Building C.

By Otto Loewi, M.D., Professor of Pharmacology, University of Graz.

THE EDWARD K. DUNHAM LECTURESHIP

In 1923 there was founded in memory of Dr. Edward K. Dunham (M.D., Harvard, 1886), the Edward K. Dunham Lectureship for the Promotion of the Medical Sciences. Among the useful purposes for which the Foundation was established was that of binding closer, "the bonds of fellowship and understanding between students and investigators in this and foreign countries". The lecturers are chosen from "eminent investigators and teachers in one of the branches of the Medical Sciences, or of the basic Sciences which contribute toward the advance of Medical Science in the broadest sense". The lectures, which are given annually, are "free and open to the faculty and students of the Harvard Medical School and College, and all other interested professional persons who may profit by them".

LAWRENCE CANCER CLINIC

Lawrence, Massachusetts,
March 29, 1933.

Dear Doctor:

The regular Lawrence Cancer Clinic, to be held at Lawrence General Hospital, 1 Garden Street, Lawrence, on Tuesday, April 18, at 10 A.M., sharp, will be a Demonstration Clinic with Channing C. Simmons, M.D., of Boston, Associate in Surgery at Harvard University Medical School, and Acting Surgeon-in-Chief to Collis P. Huntington

Memorial Hospital, Boston, and Member of Cancer Commission of Harvard University, present as consultant. You are invited to accompany any of your patients whom you desire shall have this service, or to send them with a note, and a report will be returned to you. This service is gratis. Your attendance at the Clinic is always welcome.

Committee:

ROY V. BAKETEL, M.D.,
CHAS. J. BURGESS, M.D.,
FRED'K D. MCALLISTER, M.D.,
JOHN J. MCARDLE, M.D.,
HARRY H. NEVERS, M.D.,
THOS. V. UNIAC, M.D.,
J. FORREST BURNHAM, M.D.
Chairman.

REPORTS AND NOTICES OF MEETINGS

HARVARD MEDICAL SOCIETY

A regular meeting of the Harvard Medical Society was held in the amphitheatre of the Peter Bent Brigham Hospital on Tuesday evening, March 14. Dr. Harvey Cushing presided. The meeting opened with a presentation of cases.

The first patient was a 34 year old married woman who complained of numerous hemoptyses. Her school teacher had noticed that at the age of nine the patient became cyanotic and dyspneic on exertion. A physician told her parents at that time that she had heart disease. Since then she has practically always had dyspnea and become cyanotic on exertion, although she has never had orthopnea or edema. She was married and had six normal full-term babies. About six weeks before entry she coughed up two ounces of blood and then more blood several days later. She finally entered the Out-Patient Department, where x-ray films showed areas of increased density at the right apex and in the left mid-lung. The patient was sent to the House, and on examination showed cyanosis and marked clubbing of the fingers. The lungs were negative as to physical signs, the left border of dullness of the heart was 11 cm. to the left of the sternum in the fifth interspace, and the right border four cm. to the right of the sternum. There was a thrill, maximal in the third and fourth interspaces, two cm. to the left of the mid-sternal line; and a systolic murmur was audible over the entire precordium. The red blood count was 8,150,000, and hemoglobin 135 per cent by the Sahli method. Other laboratory data were negative. No sputum was obtained. The electrocardiogram showed right ventricular preponderance. The heart lesion was diagnosed as the tetralogy of Fallot.

The second patient was a 42 year old, single, male who, during convalescence from an operation for osteomyelitis of the tibia in 1922, developed a duodenal ulcer. A posterior gastro-enterostomy was finally done at that time. In 1924 a new ulcer, bleeding this time, was treated successfully by a rigid medical régime. A gastrocolic fistula was treated surgically in 1929, the patient's complaint being diarrhea of six weeks' duration. A jejunocolic fistula was found on this present admission, the complaint of the patient again being persistent diarrhea. This time the fistula was first dealt with, and then two-thirds of the stomach was resected and a Polya anastomosis effected. The patient is now in his fourth post-operative week and is doing well, and hydrochloric acid is still being secreted in the remnant of the stomach.

Dr. Stanley Cobb was the first speaker on the program, which was devoted to "Recent Work upon the Cerebral Circulation." Dr. Cobb spoke briefly on "Anatomy and Clinical Implications." A revision of certain statements in neurological textbooks is necessary, the speaker stated. In particular there are two concepts that must be revised in the light of present-day experimental work: (1) that there are many end arteries and few anastomoses in the brain, and (2) that there is no vasomotor apparatus for control of the blood vessels. In regard to the first erroneous concept, it has been shown by Fay and others, including the group at the Boston City Hospital, that the anastomotic channels between vessels of all sizes in the brain are elaborate and numerous. In regard to the second teaching, autonomic and sympathetic nerve endings have been demonstrated in the blood vessels themselves. Furthermore, Dr. Cobb and his coworkers showed that, by actual observation through a window in the skull designed by H. S. Forbes, one can see the vessels of the brain constrict as a result of sympathetic stimulation and dilate following vagus stimulation. When the sympathetic was stimulated constriction followed 100 times in 116 attempts, while the vagus effect was noted 101 times in 128 attempts.

The speaker went on to consider anemia of the brain and its resultant effect — convulsions, and later death. A moving picture of a luetic patient with severe uncontrollable right-sided convulsions was shown, and then lantern slides depicting the condition of the brain. The gray matter of the left cerebral hemisphere, almost normal grossly, on careful examination after staining, showed the characteristic "erbleichung" (washed out, pale) appearance of an area of relative anoxemia resulting from the changed staining reactions of many of the nerve cells.

Dr. Tracy Putnam described his "Observations on the Cerebral Circulation in Animals." In order to control the window experiments of Forbes, he ingeniously devised a pump for driving a definite volume of blood at constant pressure into the carotid arteries and brain. This pump operates against the resistance of the vessels in the brain, and by counting the strokes after certain procedures one finds whether the procedure is dilating or constricting the blood vessels. There is a de-

crease in strokes per minute on sympathetic stimulation (vasoconstriction) and an increase on vagus stimulation (vasodilation). Although there is such a vasomotor control of the blood vessels in the brain, this factor is less marked in the brain than in other organs, and is less important under normal physiological conditions than is the systemic blood pressure in controlling cerebral flow.

Dr. William G. Lennox spoke on "Observations on the Cerebral Circulation in Man." The avenues open in such a study are as follows: (1) inspection during operation, (2) examination of the retina, (3) observation of changes in cerebrospinal fluid pressure, (4) observations with a needle inserted into the internal jugular vein. This last approach is the one now interesting Dr. Lennox and his coworkers. In following up this method, two main sorts of observations have been made: (1) measurement of the oxygen and carbon dioxide entering and leaving the brain, (2) use of a thermo-electric blood-flow recorder to ascertain changes in speed rate of flow through the internal jugular vein, and volume of flow.

Under the first heading (oxygen studies) it has been found that the blood leaving the brain is more "reduced," or contains less oxygen and more carbon dioxide, than blood leaving the extremities. It may thus be concluded that the metabolism in the brain is high, or the flow slow, or both. The respiratory quotient of the brain is relatively high, and more glucose is removed from the blood stream than from the extremities. The cerebral vessels are very sensitive to changes in the oxygen and carbon dioxide tension in the arterial blood. Increase in carbon dioxide causes a greatly increased flow, decrease in carbon dioxide a decreased flow. The changes when the oxygen tension varies are slighter and in the opposite direction. Furthermore, changes in blood flow in the brain may be in an opposite direction from changes in the extremities. The brain is preferentially supplied, as it were, with the oxygen it needs.

Observations with the thermo-electric blood flow recorder are being made with Dr. and Mrs. Gibbs who have developed the apparatus and the technique used. The recorder, consisting of a stylet with an electrically heated tip, is inserted through a hollow needle into the lumen of the internal jugular vein. The temperature of the heated tip gives an index of the speed of the passing blood; the temperature of the tip varies inversely with the rate of flow. Changes in cerebral blood flow with respect to convulsions, sleep, changes in posture, and after the administration of oxygen, carbon dioxide, nitrogen, amyl nitrite, adrenalin, caffein, ergotamine tartrate, etc., are being studied.

BOSTON ORTHOPEDIC CLUB

Dr. Louis C. Kress, Assistant Director of the Division of Cancer Control of the New York State Department of Health, spoke to the Boston Orthopedic Club on Monday evening, February 20, on the subject of "Tumors of Bone." The speaker presented his subject with the aid of lantern slides from the clinical, pathologic, and radiographic standpoints.

Dr. Kress first spoke of the benign tumors. He gave several brief case histories of patients with exostoses, and pointed out that these exostoses are more frequently found at the sites of muscle insertions than elsewhere, and that they usually grow in the direction of muscle pull. They may very rarely become the site of a malignant growth. It is probably best, however, to leave them alone unless they cause trouble; if they are bothersome they are removed. Chondromas, usually originating in the medullary cavity of the bone, most frequently occur in the phalanges of the hands and feet. If they are found in the sternum, ribs, or long bones they should be considered malignant.

Osteogenetic sarcomas were next discussed. A case of chondromyxosarcoma was first described. Amputation, if possible, is advised; if not, high voltage x-ray treatment, even though these tumors are apt to be very resistant, is to be tried. Primary chondrosarcomas are the most malignant of all these tumors. Death usually occurs in about 20 months, unless amputation has been done early. Case histories often reveal a history of trauma. By x-ray are seen new bone formation (perpendicular to the shaft), periosteal lipping, mottling of the medullary cavity, and a relatively translucent tumor outside the bone itself, with the shaft traceable through it. The spicules of new bone may have the characteristic "sun-ray" appearance so often described in textbooks. Some of these tumors are definitely osteolytic in character. In this kind of tumor a rise in temperature and increased white blood cell count are signs of metastasis.

In case of solitary bone cysts there is most always a history of a break of the bone at the site of involvement. These cysts show a well-defined lining and small trabeculations throughout the cavity. Two methods of treatment are available—curettage followed by crushing the cyst, or radiation. Often such cysts are difficult to diagnose by x-ray from a single lesion of osteitis fibrosa cystica, but in the latter the now well-known relation of the parathyroid and the changes in blood chemistry aid in differentiating the two. Bone cysts occur most frequently in the tarsals, metatarsals, and at the ends of long bones.

The so-called Ewing sarcoma occurs most frequently in young individuals and may often be confused clinically and roentgenographically with osteomyelitis. Fibrosing at first, it later becomes osteolytic. Its rapid response to x-ray treatment is pathognomonic. By roentgenogram new bone is seen parallel or sometimes perpendicular to the shaft and there is widening of the medullary cavity.

Multiple myeloma shows characteristic punched-out areas in the skull, especially in frontal and parietal bones. Metastatic carcinoma is more

evenly distributed as a rule, and there is usually a more definite area of sclerosis around each cyst-like formation than in myeloma. The speaker then concluded with a brief discussion of Paget's disease, bone tuberculosis, Charcot's joint, and leptothrix infection in the differential diagnosis of lesions of bone.

Dr. George W. Holmes opened the discussion. He reviewed briefly the history of the study of bone tumors and their treatment. Dr. Holmes added that surgery is indicated in bone tumors whenever possible, even in Ewing's tumor which so rapidly responds to radiation. Radiation therapy in metastatic tumors of bone is of great value in the relief of pain. The speaker showed an x-ray film of a bone tumor crossing a joint space, a thing which tumors rarely do. This one was pulsating, furthermore, and hence pointed to hypernephroma or thyroid cancer as the most likely possibilities.

Dr. Ralph D. Leonard pointed out the great responsibility the roentgenologist has in the diagnosis of tumors of bone. He also emphasized the necessity of routine examination of the chest in all cases, the value of x-ray as a therapeutic test in Ewing's sarcoma, and the importance of biopsy and pathological study in addition to roentgenographs. He showed several slides, one of them illustrating probable sarcomatous degeneration in Paget's disease.

Dr. M. C. Sosman asked the speaker of the evening how important he thought trauma was in the etiology of bone tumors. Dr. Sosman also presented several slides, illustrating particularly the x-ray findings in meningiomas and also showing pictures of a case of Ewing's sarcoma originating in the coracoid process of the scapula, and responding well to x-ray, only to recur over a year later in the jaw on the same side.

Dr. E. C. Vogt spoke briefly of the great difficulty of differentiating bone tumors in children and inflammatory conditions, and showed films of a case, followed for a long time, with the diagnosis still undetermined.

Dr. Shields Warren spoke of the necessity of coöperation between surgeon, x-ray specialist, and pathologist in the diagnosis and treatment of bone tumors. The pathological picture is often impossible to interpret and evaluate without other data. Biopsy on bone tumors is probably not harmful if followed immediately by operation when the latter is indicated.

Dr. C. C. Simmons and Dr. E. M. Daland discussed the subject from the clinical standpoint. Dr. Simmons said the first thing to do in these conditions is to make up one's mind whether an attempt at cure or merely palliation is indicated. Early diagnosis is imperative. Radiation is of value in Ewing's sarcoma and in benign giant cell tumors. In the latter, the choice between curettage, radiation, and in some cases amputation, has to be made. A certain number of so-called benign giant cell tumors very definitely become malignant and metastasize. In osteitis fibrosa cystica the plasma phosphatase value aids in diagnosis. Biopsy is of great value, with preparations for amputation made before starting. In closing, Dr. Simmons said that bone tumors should not be considered hopeless, and that the surgeon can hope for 20 per cent five-year cures taking all the cases as a whole.

Dr. Daland reviewed some of the work and results at the Pondville State Hospital in Massachusetts. Some 40 primary bone tumors, 20 of these osteogenetic, and 200 metastatic cases have been seen in this institution. Radiation is of great value in relief of pain in metastatic disease. Routine x-rays of skull, spine, pelvis, femora, and humeri are indicated in breast cancer before operation is performed, to rule out metastases.

In closing, Dr. Kress answered Dr. Sosman's question by saying that he believed that trauma did not play so much of a part in the causation of bone tumors as is indicated in case histories. Dr. Frederic Cotton had mentioned that the solitary cysts he had seen were usually diaphyseal near the epiphysis. Those of Dr. Kress have been epiphyseal. In operable Ewing's tumors x-radiation is indicated first, Dr. Kress believes.

BOSTON MEDICAL HISTORY CLUB

Monday Evening, April 17, at 8:15 o'clock
Boston Medical Library, 8 The Fenway, Boston
John Ware Hall

Leeuwenhoek and His Influence on Biology. Professor G. H. Parker, Harvard University.

An account of Leeuwenhoek's microscopes and exhibition of a copy of an original now at the University of Utrecht, Holland. Dr. Benjamin Spector.

Followed by the Leeuwenhoek Movie Film in five reels.

This film, made in Holland, graphically depicts the remarkable work done by the Dutch microscopist in the fields of biology and medicine. It first briefly tells the story of his life and then passes on to demonstrations of the various biological forms and structures studied by Leeuwenhoek and presented by him in letters to the Royal Society of London.

After the meeting there will be an exhibition of early microscopes by courtesy of the Harvard Medical School and of books, prints and medals.

Public meeting open to all interested persons.

JAMES F. BALLARD, *Secretary.*

NEW ENGLAND OBSTETRICAL AND GYNECOLOGICAL SOCIETY

The spring meeting of the New England Obstetrical and Gynecological Society will be held at Hartford, Conn., on Wednesday, April 26, 1933.

An attractive program has been arranged by the Connecticut group, which will be in the mail within a few days.

Arrangements have been made with the Eastern

Greyhound Bus Company to transport the members of the Society from Boston to Hartford for $3.60 per person for the round trip. Busses will leave the Greyhound Bus Depot, Park Square, Boston, April 26, at 8:30 A.M.

FRED. LYNCH, M.D.

THE NEW ENGLAND ROENTGEN RAY SOCIETY

The April meeting will be held at the Boston Medical Library, April 21, 1933, at 8:15 P.M.

SCIENTIFIC SESSION

"The Early Appearance and End Results of Skeletal Tuberculosis." Z. B. Adams, M.D., Boston, Mass.

The usual dinner will be held at the Harvard Club.

C. W. BLACKETT, M.D., *President*,
35 Bay State Road, Boston, Mass.
T. R. HEALY, M.D., *Secretary*,
370 Marlborough Street, Boston, Mass.

MASSACHUSETTS GENERAL HOSPITAL

FRACTURE SERVICE

The next Fracture Meeting will take place on Friday evening, April 21, at 8 o'clock in the Lower Out-Patient Amphitheatre.

SUBJECTS

Fractures of the Shaft of Femur. Dr. Van Gorder.
Compound Fractures. Dr. Daland.

House-officers, students and visitors welcome.

PHILIP D. WILSON, M.D.,
Associate Chief, Fracture Service.

SUFFOLK DISTRICT MEDICAL SOCIETY

ANNUAL MEETING

The Annual Meeting, Suffolk District Medical Society, will be held in John Ware Hall, Boston Medical Library, 8 The Fenway, Wednesday evening, April 26, 1933, at 8:15 P.M.

Business:
Reports of Auditing and Nominating Committee.
Report of Treasurer.
Election of Officers.

Subject of the evening:
Organization of the Medical Profession for Rendering Best Medical Service. Dr. Channing Frothingham.

Discussion to be opened by Drs. Richard M. Smith, Frank H. Lahey, and Hans Zinsser.

WILLIAM H. ROBEY, M.D., *President.*
LELAND S. MCKITTRICK, M.D., *Secretary.*

CENSORS' MEETING

The censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, No. 8 The Fenway, Thursday, May 4, 1933, at 4:00 o'clock.

Candidates should make personal application to the Secretary, and present their medical diplomas at least one week before the examination.

LELAND S. MCKITTRICK, M.D., *Secretary.*
205 Beacon Street, Boston.

WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

ELEVENTH ANNUAL MEETING

MILWAUKEE, JUNE 12-16, 1933

Headquarters: Hotel Pfister, Milwaukee, Wisconsin

PRELIMINARY PROGRAM

MONDAY, JUNE 12, 1933

12:30 P.M. Luncheon at College Woman's Club in Honor of Past Presidents, followed by National Board Meeting and visit to American Medical Association Exhibits at Auditorium. Tickets $1.00.

7:00 P.M. Dinner for National Board, Delegates, and wives of Officers and Delegates of the American Medical Association at Woman's Club of Wisconsin. Musical Program furnished by Artist Members of Auxiliary to Medical Society of Milwaukee County. Tickets $1.25.

TUESDAY, JUNE 13, 1933

9:00 A.M. General Meeting, Roof Room, Hotel Pfister. Mrs. James F. Percy, Presiding.

12:30 P.M. Luncheon and Bridge at the Wisconsin Club. Tickets $1.25.

2:00 P.M. *Attractions available for those not wishing to play Bridge are Layton Art Gallery, Milwaukee Art Institute, Milwaukee Museum, Curative Work Shop and Vocational School.

Or

*Bus Trip to County Institutions, Milwaukee Children's Hospital Convalescent Home, and Washington Park Zoo.

8:00 P.M. General Meeting of American Medical Association.

10:00 P.M. Informal Dance at Wisconsin Club. Courtesy of State Medical Society of Wisconsin. Hostesses: Woman's Auxiliary to the State Medical Society of Wisconsin.

WEDNESDAY, JUNE 14, 1933

9:00 A.M. General Meeting. Roof Room, Hotel Pfister. Mrs. James F. Percy, Presiding.

12:30 P.M. Auxiliary Luncheon. Fern Room, Hotel Pfister. Toastmistress, Guests and Speakers from the American Medical Association. Musical Program. Tickets $1.00.

4:00 P. M. *Teas in Private Residences.

8:30 P.M. Light Opera. Tickets $1.00.

THURSDAY, JUNE 15, 1933

9:00 A.M. General Meeting. Roof Room, Hotel Pfister. Mrs. James Blake, Presiding.

*Bus transportation to be paid by individuals.

12:00 Noon. Trip to Oconomowoc Lake District. Luncheon 12:30 P.M., Carnation Milk Plant, Oconomowoc, Wisconsin, Transportation and Luncheon Courtesy of Carnation Milk Company.

Or

12:30 P.M. Buffet Luncheon. Crystal Room, Hotel Pfister. Tickets 75c.

2:00 P.M. *Sight Seeing Tour of Milwaukee.

6:30 P.M. "Bring Your Husband" Dinner. Fern Room, Hotel Pfister. International-House-Cabaret. Tickets $1.50.

9:00 P. M. President's Reception and Ball. Schroeder Hotel. Hosts: The American Medical Association.

FRIDAY, JUNE 16, 1933

10:00 A.M. Golf Tournament.

All Trips start from Hotel Pfister

All women attending this Convention whether Auxiliary Members or not are invited to participate in this entire program.

MRS. ROCK SLEYSTER, *General Chairman.*
Wauwatosa, Wisconsin.

*Bus transportation to be paid by individuals.

BRISTOL NORTH DISTRICT MEDICAL SOCIETY

ANNUAL MEETING

Friday, April 21, 1933, at Taunton State Hospital

PROGRAM

12:15 P.M. Dinner as guests of Dr. Chambers.
1:30 P.M. Business.
2:00 P.M. Speaker: Dr. Richard M. Smith, of Boston, of Committee on Costs of Medical Care.

C. B. KINGSBURY, *Secretary.*

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

Annual Meeting: Middlesex South District Medical Society, April 20, 1933, at noon, Hotel Continental, Cambridge. Dr. H. Quimby Gallupe, Speaker.

Censors' Meeting: Boston Medical Library, Thursday, May 4.

ALEXANDER A. LEVI, M.D., *Secretary.*

NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN

The regular clinical conference of the New England Hospital for Women and Children will be held at the hospital, Dimock Street, Roxbury, on Thursday, April 20, at 8 P.M., with the following program: Diseases of the Gall Bladder; presentation of cases by the house officers, and discussion by Dr. Nute and Dr. Rochford. Gastro-Intestinal Treatment, by Dr. D. Frank Gray of Providence.

ALICE H. BIGELOW, M.D., *Secretary.*

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Amphitheatre (Van Dyke Street entrance), Tuesday evening, April 25, at 8:15 o'clock.

PROGRAM

Presentation of Cases.

Vasodilatation in Vascular Disorders of the Lower Extremities. Dr. Eugene M. Landis, Robinette Foundation, Hospital of the University of Pennsylvania.

JOHN HOMANS, M.D., *Secretary.*

JOINT MEETING OF THE GREATER BOSTON MEDICAL SOCIETY AND THE BETH ISRAEL HOSPITAL

There will be a joint meeting of the Greater Boston Medical Society and the Beth Israel Hospital on Tuesday, April 18, at 8:15 P.M., at the Beth Israel Hospital.

PROGRAM

1. "X-ray Studies of the Gastro-Intestinal Mucosa: Diagnostic Value." Alice Ettinger, M.D., Berlin, Germany.

Discussion: Harry F. Friedman, M.D. William S. Altman, M.D.

2. "X-ray Visualization of the Liver and Spleen: Hepato-Splenography." Bernard I. Goldberg, M.D.

Discussion: Samuel A. Robins, M.D.

BERNARD I. GOLDBERG, M.D., *Secretary.*

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

April 13—Massachusetts General Hospital, Clinical Meeting. See page 768, issue of April 6.

April 14—William Harvey Society. See page 769, issue of April 6.

April 17—Boston Medical History Club. See page 814.

April 18—Joint Meeting of the Greater Boston Medical Society and the Beth Israel Hospital. See notice above.

April 18—Lawrence Cancer Clinic. See page 811.

April 18—South End Medical Club. See page 768, issue of April 6.

April 20—Clinic in Medicine at Peter Bent Brigham Hospital. See page 811.

April 20—New England Hospital for Women and Children. See notice elsewhere on this page.

April 21—Massachusetts General Hospital, Fracture Meeting. See page 815.

April 21—New England Roentgen Ray Society. See page 815.

April 25—Harvard Medical Society. See notice elsewhere on this page.

April 26—New England Obstetrical and Gynecological Society. See page 814.

May 4 and 11—The Edward K. Dunham Lectures for Promotion of the Medical Sciences. See page 811.

May 8, 9, and 10—American Gynecological Society. See page 516, issue of March 2.

May 9-10—American Climatological and Clinical Association. See page 769, issue of April 6.

May 17—New England Physical Therapy Society. See page 1010, issue of December 1.

May 22-May 31—The New England Heart Association. See page 1011, issue of December 1.

June 12-16—Woman's Auxiliary to the American Medical Association. See page 815.

June 13—The American Board of Obstetrics and Gynecology. See page 607, issue of March 16.

June 13—American Heart Association. See page 768, issue of April 6.

June 28 to July 3—Third International Hospital Association. See page 811.

August 10, 11, 12—American Delegation to the International Goiter Conference. See page 768, issue of April 6.

October 9-12—American Public Health Association. See page 403, issue of February 16.

DISTRICT MEDICAL SOCIETIES

BRISTOL NORTH DISTRICT MEDICAL SOCIETY

April 21—See page 816.

ESSEX NORTH DISTRICT MEDICAL SOCIETY

May 3—Wednesday, Annual Meeting. See page 769, issue of April 6.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Tentative Program

Thursday, May 4, 1933—Censors' Meeting, Salem Hospital, 3:30 P.M.

Tuesday, May 9, 1933—Annual Meeting. Salem Country Club, Forest Street, Peabody. Golf in afternoon; greens fee $2.00. Dinner at 7 P.M. Speaker: Dr. George Burgess Magrath. Subject to be announced later. Ladies invited.

R. E. STONE, M.D., Secretary.

FRANKLIN DISTRICT MEDICAL SOCIETY

Meeting will be held at the Weldon in Greenfield on the second Tuesday of May.

CHARLES MOLINE, M.D., Secretary.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

May, at the Meadowbrook Club, Reading.

ALLAN R. CUNNINGHAM, M.D., Secretary.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

April 20—Annual Meeting. See page 816.
May 4—Censors' Meeting. See page 816.

NORFOLK DISTRICT MEDICAL SOCIETY

May—Annual Meeting. Time, place and subject to be announced.

FRANK S. CRUICKSHANK, M.D., Secretary.
1695 Beacon Street, Brookline.

SUFFOLK DISTRICT MEDICAL SOCIETY

April 26—Annual Meeting. See page 815.
May 4—Censors' Meeting. See page 815.

WORCESTER DISTRICT MEDICAL SOCIETY

Wednesday, May 10—The Annual Meeting. Place and program to be announced later.

ERWIN C. MILLER, M.D., Secretary.

BOOK REVIEWS

A New Theory of Cancer and Its Treatment. Part II. By C. F. MARSHALL, M.Sc., M.D., F.R.C.S. John Wright and Sons, Ltd. Bristol, England. 1932. Pp. 56. Price 3/6 net.

This represents additional "evidence" to that previously brought forward by the author as to the rôle of chorionic elements in the evolution of cancer. He advocates the intravenous use of autogenous leucomaines and radium solution.

The reviewer fears that the only profit accruing from the publication of this book will be that of the printer.

Plastic Surgery of the Nose, Ear and Face. By VICTOR FRÜHWALD, M.D. Translated by Geoffrey Morey, M.D. Publisher — Wilhelm Maudrich, Vienna.

This short book of eighty-four pages and eighty-eight illustrations deals with three phases of plastic surgery: correction of deformities of the nose, correction of malformations of the ear, and the removal of facial wrinkles including the eyelids, forehead, and neck. Various operative methods, chiefly those used and approved by the author, are described in a simple straightforward manner and are illustrated by diagrams.

The book, however, contains neither the photographs of actual cases nor bibliographies of collateral literature which are so desirable in any book intended for use as a text. On the whole, the material covered is elementary in character and treatment, and it cannot be fairly said that it adds anything to what can now be found in the standard books of this subject published in English.

Human Cancer. ARTHUR PURDY STOUT, M.D. Lea and Febiger. Philadelphia, 1932. Pp. 1007. Price $10.00.

This book by Purdy Stout is of particular value in that it represents in large part personal experience, though checked against the experience of others. The large number of photographs are of material advantage. They are in general well selected to show the essential points, though some of the photomicrographs are poor. The book is divided into forty-seven chapters covering the different portions of the body with the exception of the brain and the meninges. This omission is rather unfortunate in that the important field of brain tumor is thus ignored.

In all of the important malignant processes the etiological factors, the lesions believed to be precancerous, the growth and spread of the tumor, the symptoms and treatment are all discussed. The sections on treatment are not at all detailed as to technical procedure but are definitely valuable from the standpoint of appraisal of results.

The author has a bias in favor of surgical treatment. However, other methods of treatment are described and a sufficient number of statistics presented to give a fair idea as to their relative values.

Just as Ewing's "Neoplastic Disease" is the vade mecum of the pathologist, so this volume by Stout should be the handbook for the clinician in the field of malignant disease.

A well-chosen list of references with each chapter, arranged according to date of publication, is of real value.

Textbook of Materia Medica and Therapeutics. By SISTER ALMA. The Macmillan Company, New York. 1933. 307 Pages. Price $2.50.

The author is a graduate in Pharmacy who for a number of years has given instruction in Materia Medica and Therapeutics to student nurses. She has proceeded on the basis that "a textbook on Materia Medica and Therapeutics should be a book that illustrates how the use of drugs fits in with general nursing care, how drugs in general act, why and when they should or should not be used, and other facts necessary for the nurse to know in handling and administering medicines and in caring for her patients". The emphasis of this textbook is on therapeutics rather than drugs. Student nurses are encouraged to study the use and

effect of drugs through observation of their own patients rather than through the medium of a text, and to make case reports. There are a number of excellent diagrams in the text.

Its limitation lies in its rather brief discussion of important drugs. A chapter on Dietotherapy is included. Schools of nursing give a separate course in this subject. The material given here overlaps this course and at the same time it is not adequate for the knowledge which the student nurse needs.

Syllabus of Medical History. By VICTOR ROBINSON. New York: Froben Press, Inc., 1933. 110 pages. Price $1.00.

This is a small volume on medical history by a well-known author. The material is put in the form of questions and answers, such as a beginner in medical history might use in the classroom. In addition there is a specimen essay, illustrating the form of a more extended notice of a medical worthy. There are also numerous illustrations, a chronology of goitre, and a note on the photostat and its value to students of medical history by Charles P. Fisher, Librarian of the College of Physicians of Philadelphia.

This is a useful manual for the classroom, showing the various forms of teaching the subject. The author's style leaves much to be desired, but in general the book will find a place for itself in a medical history library. A considerable portion of the material has already appeared in other publications by the same writer.

A General History of Nursing. By LUCY RIDGLEY SEYMER, M.A. (Oxon.), S.R.N. 317 pages. Fully illustrated. The Macmillan Company, New York. 1933. Revision for American publication by Nina D. Gage, M.A., R.N. Price $2.75.

This volume is an important addition to the field of nursing history. It is thoroughly documented and reveals interesting new sources of historical material. There is an excellent bibliography. Perhaps its most outstanding contribution is its treatment of modern developments in nursing. Over half the book is devoted to the period since 1870. The author states in her preface "the fact that nursing has advanced with great strides, especially since 1919, seems to justify fresh efforts to summarize its achievements".

The systems of nursing followed in various countries are discussed and contrasted, and the development of public health nursing is well and concisely reviewed. The volume gives evidence of scholarly study, the results of which are presented in such a stimulating way that it should do much to teach student nurses to value the rich heritage of their profession. However, anyone interested in the history of medicine and its allied fields will find this book of genuine interest.

The History of Dermatology. By WILLIAM ALLEN PUSEY, A.M., M.D., LL.D. Charles C. Thomas, Springfield, Ill., and Baltimore, Md. With thirty-three illustrations. Price $3.00 postpaid.

Pusey's writings are always interesting. The dry facts of the past, the development of disease names and biographical data stand out with unusual interest in this book. From the Smith Papyrus of the seventeenth century B.C. and the Ebers Papyrus of a century later to the present time the development of dermatology is portrayed. One finds revealed the great amount of interest in the skin in earlier times, the participation of the pathologist, the surgeon, physician, and the biologist in this field, the development of clinical dermatology in France, and laboratory dermatology in Germany, and the great advances in the last fifty and seventy-five years. There are numerous short and pithy biographical sketches of dermatologists of all countries who have made notable contributions. A historical index is appended. It is a stimulating book and well worth perusal. Numerous excellent illustrations, including photographs of eminent dermatologists of the past, enhance the value of the book.

BOOKS RECEIVED FOR REVIEW

Asthma, Hay Fever and Related Disorders. A Guide for Patients by Samuel M. Feinberg. Published by Lea & Febiger. 124 Pages. Price $1.50.

Office Surgery by Fenwick Beekman. Published by J. B. Lippincott Company. 402 Pages. Price $5.00.

Calcium Metabolism and Calcium Therapy by Abraham Cantarow. With a foreword by Hobart Amory Hare. Second Edition. Published by Lea & Febiger. 252 Pages. Price $2.50.

Les Ictéres by Étienne Chabrol. Published by Masson et Cie, Éditeurs. 524 Pages. Price 75 fr.

Textbook of Materia Medica and Therapeutics by Sister Alma. Published by The Macmillan Company. 329 Pages. Price $2.50.

Chronic Arthritis and Fibrositis—Diagnosis and Treatment by Bernard Langdon Wyatt. Published by William Wood & Company. 201 Pages. Price $3.50.

Procedures in Tuberculosis Control for the Dispensary, Home and Sanatorium by Benjamin Goldberg. Published by F. A. Davis Company. 373 Pages. Price $4.00.

Food in Health and Disease by Katherine Mitchell Thoma. Published by F. A. Davis Company. 370 Pages. Price $2.75.

Arbeiten aus der dritten Abteilung des Anatomischen Institutes der Kaiserlichen Universität Kyoto. Edited by Prof. Dr. Seigo Funaoka. *Serie C—Experimentelle Tuberkuloseforschung.* No. 3. 111 Pages.

La technique de la Curiethérapie by Dr. Simone Laborde. Published by Gauthier-Villars et Cie. 118 Pages. Price 20 fr.